JVC

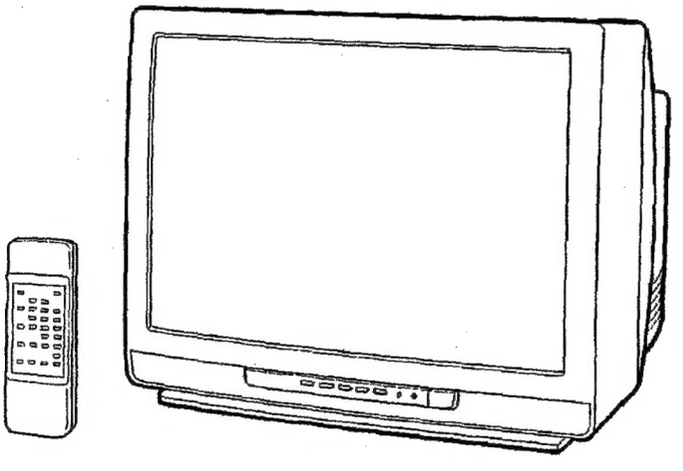
SERVICE MANUAL

COLOUR TELEVISION

AV-21ME(N)

AV-21ME(N)-A

BASIC CHASSIS
CA[2]



CONTENTS

No.50920D
Mar.1996

SPECIFICATIONS

Item	Content
Dimensions	50.4cm(W)×45.2cm(H)×49.1cm(D)
Mass	21.1kg
TV RF System	B/G, I, D/K, K_1, M
Colour System	PAL / SECAM / NTSC
Receiving Frequency	
VHF low band (VL)	46.25MHz~168.25MHz
VHF high band (VH)	175.25MHz~463.25MHz
UHF band (U)	471.25MHz~863.25MHz
Cable TV	Mid (X-Z, S1-S10) Super (S11-S20) and Hyper (S21-S41) bands can be received.
Intermediate Frequency	
VIF Carrier	38.0MHz
SIF Carrier	32.5MHz (5.5MHz), 31.5MHz(6.5MHz) 32.0MHz (6.0MHz), 33.5MHz(4.5MHz)
Colour Sub Carrier	PAL : 4.43MHz SECAM : 4.40625MHz, 4.25MHz NTSC : 3.58MHz, 4.43MHz
Antenna Input Impedance	75Ω unbalanced, Aerial-type
Power Input	
Rated Voltage	120V to 240V AC, 50Hz / 60Hz
Operating Voltage	90V to 260V AC, 50Hz / 60Hz
Power Consumption	110W (Max.), 80W (Avg.)
Picture Tube	21" (Tube size : 55cm, Visible size : 51cm), measured diagonally
High Voltage	26.5kV ± 1kV (at zero beam current)
Video Input / Out put	1Vp-p, 75Ω, RCA pin jack
Audio Input	500mVrms (-4dBs), high impedance, RCA pin jack
Audio Output	500mVrms (-4dBs), Low impedance, RCA pin jack
Speaker	5×9cm oval×2
Audio Power Output (monaural)	3W (Effective) / 5.5W (Music power)
Remote control unit	RM-C457-1H(AA/R6/UM-3 dry battery×2)

Design & specification subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
   For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠)on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Don't short between the LIVE side ground and ISOLATED(NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 POWER SUPPLY).
6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
9. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

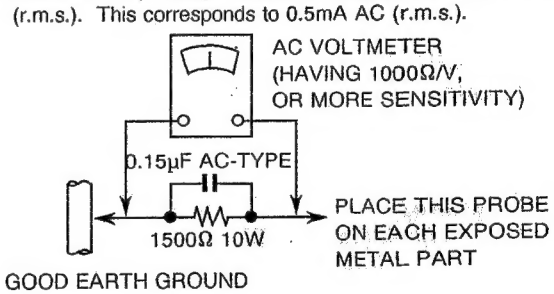
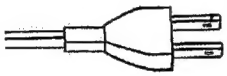


Fig.A

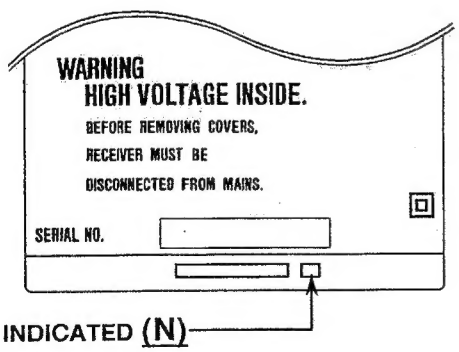
FEATURES

- New chassis design enables use of an interactive on-screen control.
- Wide range voltage (90V~260V) AC power input.
- With AUDIO.VIEDO INPUT & OUTPUT terminal.
- "Mute Button" can reduce the audio level to zero instantly.
- Functional remote control to operate TV set (for channel select, volume control, power ON/OFF, etc.) from a distance.
- I²C bus control utilizes single chip ICs for IF and V/C.

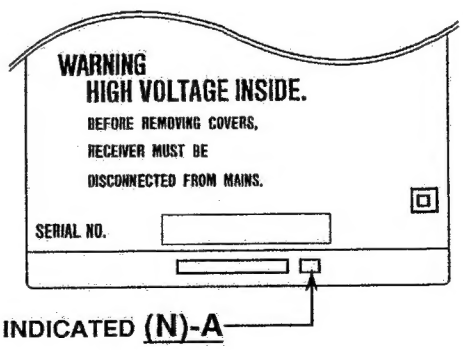
MAIN DIFFERENCE LIST BETWEEN AV-21ME(N) AND AV-21ME(N)-A MODELS

⚠	Ref. No.	PARTS No. AV-21ME(N)	PARTS No. AV-21ME(N)-A	PARTS NAME	Description
⚠	9	QMP73G0-200J5 	QMP73P0-200J5 	POWER CORD	
	10	———	CEMK002-001	ADAPTOR PLUG	PACKING PART LIST
⚠	24	CM22925-001	CM22880-002	RATING LABEL	

(AV-21ME(N) RATING LABEL)



(AV-21ME(N)-A RATING LABEL)



OPERATING INSTRUCTIONS

AV-21ME/AV-14ME
AV-21TE/AV-14TE

JVC

COLOUR TELEVISIONS

USER GUIDE

Thank you for purchasing this JVC colour TV.
Read all instructions to ensure complete understanding.
Keep instructions in a safe place for future reference.

TO ENSURE PERSONAL SAFETY, OBSERVE THE FOLLOWING RULES REGARDING THE USE OF THIS UNIT:

WARNING:

- **TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**
- AVOID DAMAGING THE AC PLUG AND POWER CORD.
- IN THE EVENT OF A FAULT, UNPLUG THE UNIT AND CALL A SERVICE TECHNICIAN. DO NOT ATTEMPT TO REMOVE THE REAR COVER OR REPAIR THE UNIT YOURSELF.

CAUTION:

- Operate only from the power source specified on the unit.
- Avoid improper installation and never position the unit in poorly ventilated places.
- Do not allow objects or liquid into the cabinet openings.
- When you do not use this TV set for a long period of time, be sure to disconnect the power plug from the AC outlet.

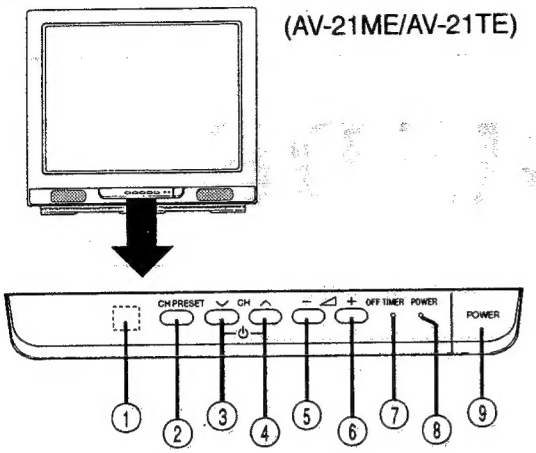
AV-21ME and AV-14ME (or AV-21TE and AV-14TE) have different screen size and cabinet design, but share in common controls and terminals with similar functions and locations. ME model (AV-21ME or AV-14ME) and TE model (AV-21TE or AV-14TE) accept different TV RF systems and colour systems. In this manual, the corresponding model code or other related explanations are indicated to specify which model is illustrated.

• CONTROLS, TERMINALS

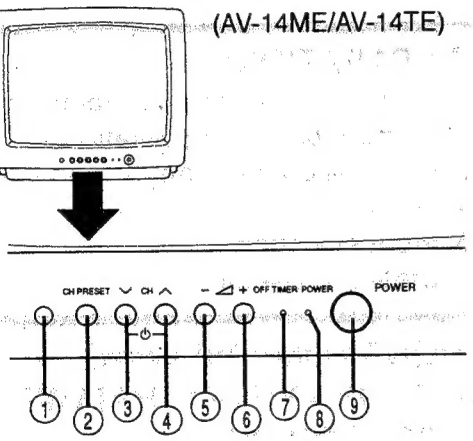
For remote keys, see page 15.
For operation, see specified pages.

■ Front

(AV-21ME/AV-21TE)

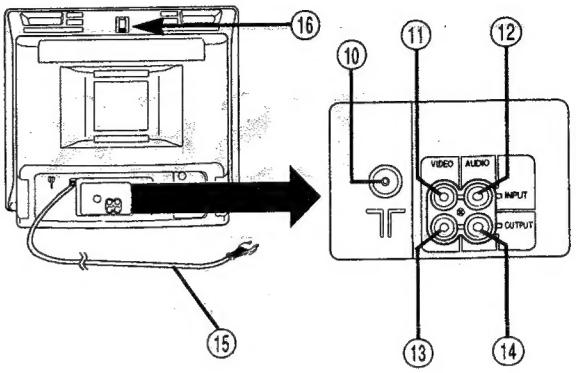


(AV-14ME/AV-14TE)

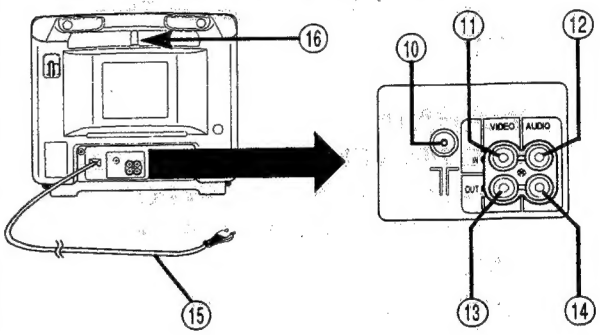


■ Rear

(AV-21ME/AV-21TE)



(AV-14ME/AV-14TE)



■ Front

① Remote control sensor	—
② CH PRESET (station presetting) button	p. 6, 7
③ CH ∨ (descending channel selection) button	p. 7, 8
④ CH ∧ (ascending channel selection) button	p. 7, 8
⑤ ◿ – (decreasing volume control) button	p. 7, 8
⑥ ◿ + (increasing volume control) button	p. 6, 7, 8
⑦ OFF TIMER indicator (orange)	p. 12
⑧ POWER indicator (red)	p. 5
⑨ Main POWER button	p. 5

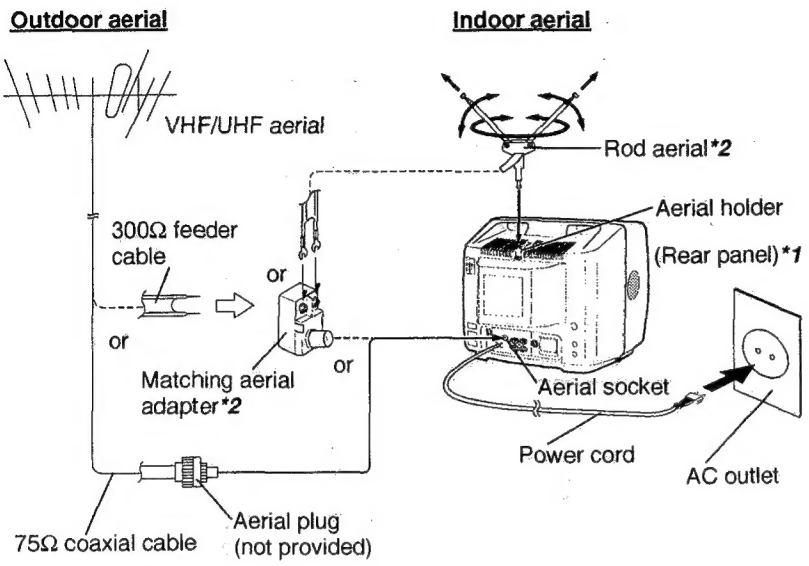
■ Rear

⑩ Aerial socket	p. 3, 4
⑪ VIDEO INPUT terminal	p. 4, 5, 9
⑫ AUDIO INPUT terminal	p. 4, 5, 9
⑬ VIDEO OUTPUT terminal	p. 4, 9
⑭ AUDIO OUTPUT terminal	p. 4, 9
⑮ Power cord	p. 3
⑯ Aerial holder	p. 3

PREPARATIONS

1. Aerial, power cord connections

[Example]



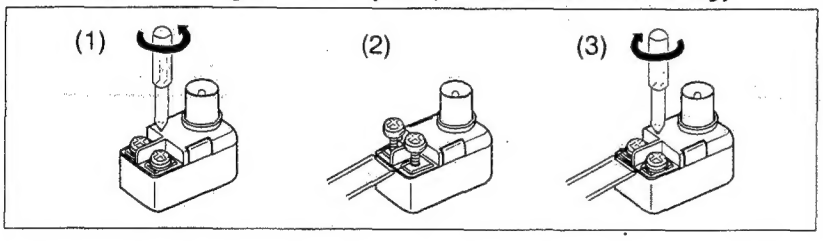
To install rod aerial (AV-14ME/AV-14TE only):
Install into the top-rear aerial holder. Once installed, it cannot be removed.

To adjust rod aerial (AV-14ME/AV-14TE only):
Adjust angle and direction by extending and rotating the rods for best reception.

****1:***
AV-14ME shown.
****2:***
Only available with AV-14ME/AV-14TE.

To connect to a VCR:
See page 4 (also refer to VCR instructions).

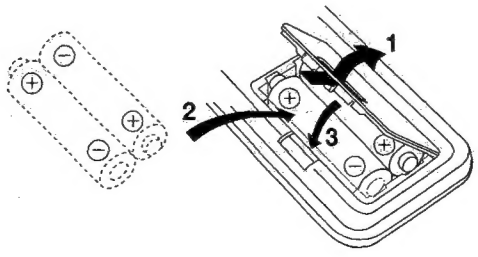
To set up matching aerial adapter (AV-14ME/AV-14TE only)



2. Remote battery installation

Precondition:
- Prepare **two** AA/R6/UM-3 dry batteries.

1. Press and lift up the cover to remove.
2. Install batteries.
3. Replace the cover.



CAUTION:
- Follow caution on batteries.

Notes:
- Correctly install batteries observing + and – polarities.
- Duration of battery use is about 6 months to 1 year, depending on frequency of use.
- Replace batteries if operation becomes erratic.
- Provided batteries are for remote-unit testing after purchase, not for regular use.

3. External connection

Preconditions:

- Before connection, turn off or unplug the TV.
- Before playing a connected component, activate TV or VIDEO mode according to which connection is active. See pages 5 and 9.

Without making external connection:

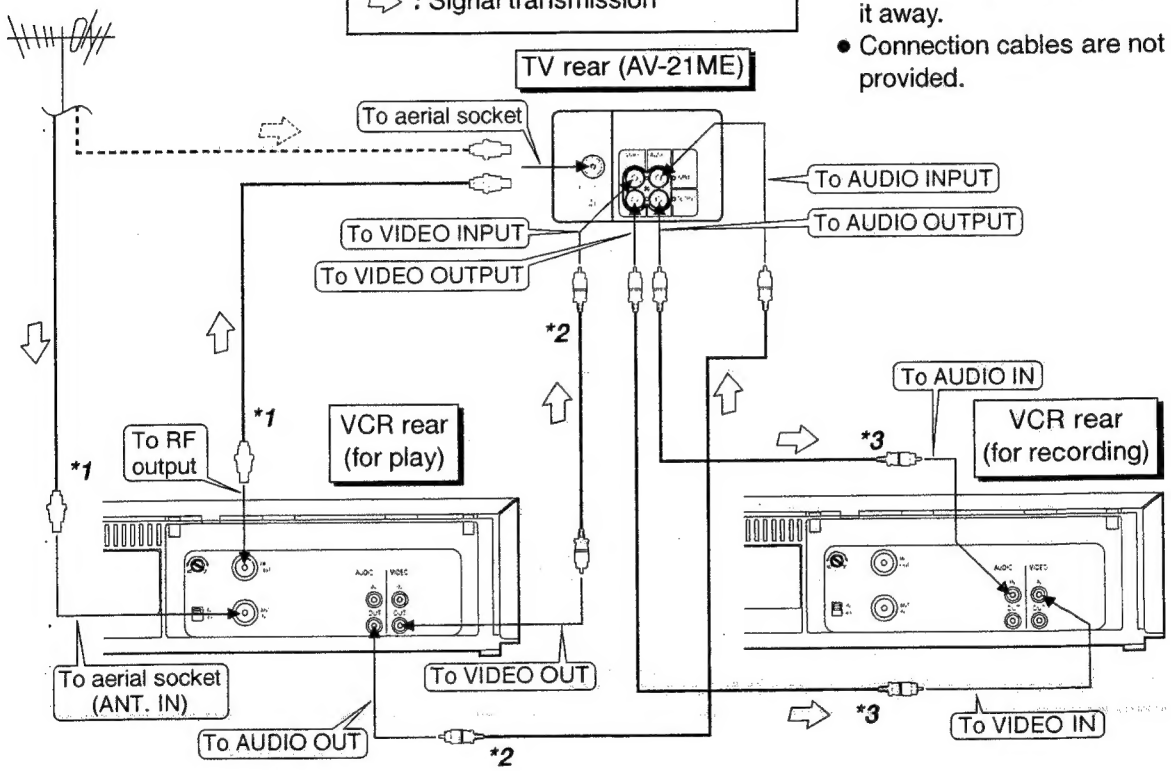
Proceed to the next section.

Notes:

- Also refer to component instructions.
- If noise occurs due to interference from a connected component, turn off the component or move it away.
- Connection cables are not provided.

[Connection example]

*1 : RF connection
*2 : A/V connection (for play)
*3 : A/V connection (for recording)
⇨ : Signal transmission



Via	*Application (example)*
TV aerial socket	Aerial (for reception) or VCR (for play)
TV VIDEO/AUDIO INPUT terminals	VCR, camcorder or videodisc player (for play each)
TV VIDEO/AUDIO OUTPUT terminals	VCR (for recording) or video monitor (for monitoring)

VCR:

Video cassette recorder

RF connection:

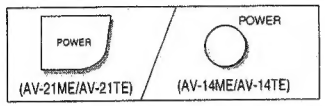
Radio-frequency (high frequency conforming to a broadcast signal) signal connection

A/V connection:

Video- and audio-signal direct connection

4. Turning on

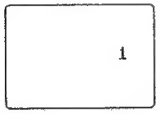
1. Press front main POWER button.



POWER indicator glows red to indicate the main power is on (the TV is in standby mode).

2. Press remote POWER standby key.

The picture appears.



To turn on using front button (in standby mode):
Press CH ∨ or ∧ button.

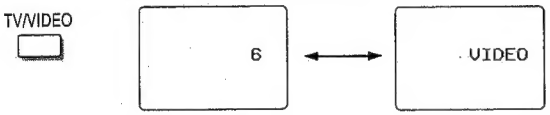
To turn on using other remote key (in standby mode):
Press TV/VIDEO or numeric key.

To turn off:
Press remote POWER standby key (main power is on).
or
Press front main POWER button (main power is off).

5. Input selection

1. Press remote TV/VIDEO key.

With each press, the input alternates between:



(TV mode) (VIDEO mode)

- The mode disappears after about 3 seconds.

TV mode:
To view broadcasts or play an RF-connected component via TV aerial socket.

VIDEO mode:
To play an A/V-connected component via TV VIDEO INPUT and AUDIO INPUT terminals.

Selection and input:

Mode selection	*Input*
TV mode	Via TV aerial socket
VIDEO mode	Via TV VIDEO/AUDIO INPUT terminals

6. Station presetting

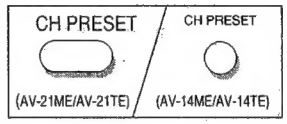
Before viewing programmes, preset broadcast stations.

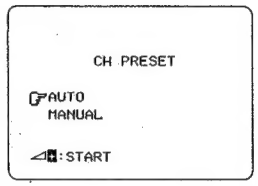
Preconditions:
- Activate TV mode (see page 5).
- Pick either AUTO or MANUAL presetting.

To preset all stations automatically

— CH PRESET-AUTO

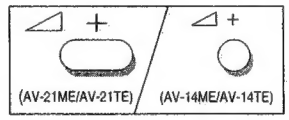
1. Turn on the TV, and press front CH PRESET button.

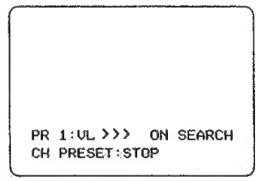




CH PRESET menu (with AUTO selected) appears.

2. Press front ◿ + (increasing volume control) button.





>>> ON SEARCH appears to indicate a station starts to be searched for.

Station searching begins from Channel Position 1 (PR 1). After being located, the station is automatically preset and Channel Position advances. The procedure for all stations to be preset is completed after about 4 minutes.

- **Now setting is complete.**
  Repeat pressing front CH PRESET button to exit menu.

Notes:
- Presetting is not possible in VIDEO mode.
- Storage of up to 60 stations is possible.

AUTO (automatic presetting):
Automatically presets all stations available where the TV is used.

MANUAL (manual presetting):
Allows a user to preset manually each required station to a desired Channel Position.

To stop searching:
Press front CH PRESET button.

Notes:
- Each station's colour and sound systems are automatically identified (see page 10).
- Channel Positions where no station is preset are automatically skip-programmed (see right on page 7).

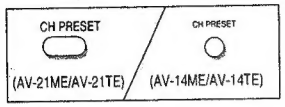
PR 1:
Channel Position 1.

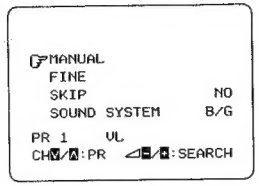
VL/VH/U:
Receiving frequency wave bands
VL = Low-frequency VHF stations
VH = High-frequency VHF stations
U = UHF stations

To preset required stations manually

— CH PRESET-MANUAL

1. Turn on the TV, and press front CH PRESET button twice to select MANUAL.



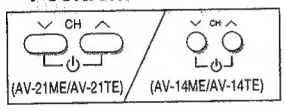


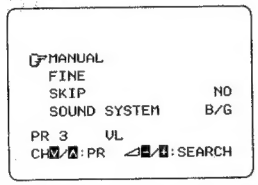
MANUAL PRESET menu appears.

- With each press, the selection changes:

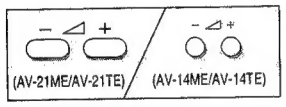
AUTO — MANUAL — FINE — SKIP — SOUND SYSTEM — (No selection)

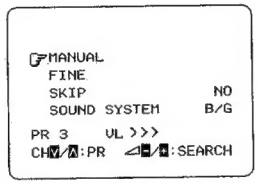
2. Press front CH ∨ (descending channel selection) or ∧ (ascending channel selection) button to select a Channel Position.





3. Press front ◁ + or – button.





>>> or <<< appears to indicate a station is being scanned.

After reaching a station, scanning stops.

Press front ◁ + or – button to repeat scanning until a required station is reached.

- Repeat steps 2 and 3 to preset all required stations.

- **Now setting is complete.**

Repeat pressing front CH PRESET button to exit menu.

To fine-tune a station being poorly received:

1. Press front CH PRESET button to select FINE (fine-tuning).
2. Press front ◁ – or + button to fine-tune the station.

While being pressed, > or < appears to indicate fine-tuning is occurring. After fine-tuning, AFC OFF appears to the right of FINE to indicate automatic fine-frequency control is deactivated.

To skip-programme Channel Positions:

1. Press front CH PRESET button to select SKIP (skip-programming).
2. Press front ◁ – or + button to activate.
   YES: activated
   NO: deactivated

When selecting preset channels, skip over skip-programmed Channel Positions, including those where no station is preset (see right on page 6), by pressing front CH ∨ or ∧ button.

To stop scanning:

Press a remote key or front button.

To switch sound system when sound is poor or signal is being poorly received:

1. Press front CH PRESET button to select SOUND SYSTEM.
2. Press front ◁ – or + button to switch to other setting.

To switch sound system in other cases, it is more convenient to press remote SOUND SYSTEM key (see page 10).

PROGRAMME VIEWING

1. Press remote POWER standby key.

The picture appears.

2. Press remote TV/VIDEO key to activate TV mode.

- The mode appears for about 3 seconds.

3. Select a preset channel:

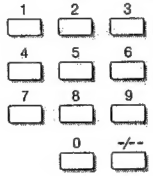
[Descending/ascending selection]

- Press remote CHANNEL ∨ (descending selection) or ∧ (ascending selection) key.

∨: Press to select a lower-frequency preset channel.

∧: Press to select a higher-frequency preset channel.

[Direct selection]

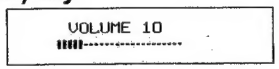


- Enter a 1- or 2-digit preset-channel number.

1. Press remote –/–– key to make – or –– appear.
2. Enter a number.
   - To enter 6 (1-digit):
     Make – appear, then press 6.
   - To enter 12 (2-digit):
     Make –– appear, then press 1 and 2.

- The number disappears after about 3 seconds.

4. Press remote VOLUME – (decreasing control) or + (increasing control) key.



Level and scale appear.

–: Press to decrease the level. The scale becomes shorter to left.

+: Press to increase the level. The scale becomes longer to right.

- The number disappears after about 3 seconds.

5. Press remote POWER standby key.

The picture disappears.

- The TV goes into standby mode (main power is on).

Note:

- If main power is off, remote POWER standby key does not function.

To turn on using front button (in standby mode):

Press CH ∨ or ∧ button.

If already in TV mode after TV is turned on:

Step 2 is not necessary.

To play a connected component:

See page 9.

To select preset channels in sequential order using front button:

Press CH ∨ or ∧ button.

AV:

Indicates Channel Position 0.

–:

Indicates a 1-digit number can be entered.

––:

Indicates a 2-digit number can be entered.

Note:

- With channel selection, each preset channel's colour and sound systems are selected automatically. If an inappropriate system is selected, change it by pressing remote COLOUR SYSTEM or SOUND SYSTEM keys (see page 10).

Volume range can vary between:

0 and 50.

To adjust the volume using front button:

Press ◁ – or + button.

To turn the main power off:

Press front main POWER button.

VIDEO PLAY/PROGRAMME RECORDING

Precondition:
- Connect to an external video component such as a VCR (see page 4).

Video play

To play, connect to a video component via TV aerial socket or VIDEO/AUDIO INPUT terminals. Then activate TV or VIDEO mode according to which connection is active.

1. Press remote TV/VIDEO key to select an input.

TV/VIDEO

Input mode appears.
With each press, the indication alternates between:

(Video mode) (TV mode)

- The indication disappears after about 3 seconds.

TV connection and mode selection:

TV connection	*Mode selection*
Via aerial socket	TV mode
Via VIDEO/AUDIO INPUT terminals	VIDEO mode

To play an RF-connected component:
After presetting the component's RF channel in the TV's Channel Position AV (0), select the preset channel on the TV.

Notes:
- Also read and follow component instructions carefully.
- Sound system switching is not possible in VIDEO mode.

Programme recording

Connect to a VCR via TV VIDEO/AUDIO OUTPUT terminals. TV broadcasts can be recorded on a connected VCR even if the VCR does not incorporate a tuner.

1. Make a source programme appear on the TV screen (if necessary, after pressing remote TV/VIDEO key to activate TV mode).

2. Make operations required to record the programme on the connected VCR.

VIDEO/AUDIO OUTPUT terminals on the TV:
Output video picture and audio sound signals being monitored on the TV.

Note:
- Also read and follow component instructions carefully.

If picture is not clear or no colour appears:
Change colour system (see page 10).
If sound is not clear or no sound is heard:
Change sound system (see page 10).

SOUND/PICTURE CONTROLS

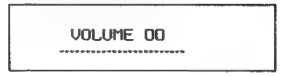
MUTE (sound muting)

Sound can be muted instantly. Convenient when answering a phone or receiving visitors.

1. Press remote MUTE key.

Level and scale appear.

MUTE



- The display disapears after about 3 seconds.

- **Press again to restore the sound.**

To restore sound by other means of control:
Press front ◿ – or + button, or remote VOLUME – or + key.

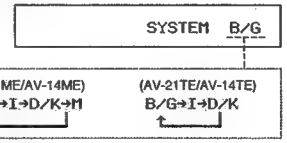
Sound system switching

Each time a station is preset or a preset channel is selected, sound system is automatically selected. If sound is not clear or no sound is heard using that system, sound system can be changed manually.

1. Press remote SOUND SYSTEM key.

SOUND SYSTEM

Sound system appears.
With each press, the system changes:



- The indication disappears after about 5 seconds.

Notes:
- Sound system switching is not effective for VIDEO mode.
- For AV-21TE or AV-14TE, SYSTEM M cannot be selected.

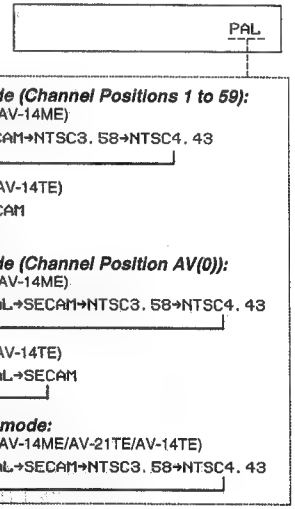
Colour system switching

Each time a station is preset or a preset channel is selected, colour system is automatically selected. If reception is weak, picture is not clear or no colour appears using that system, colour system can be changed manually.

1. Press remote COLOUR SYSTEM key.

COLOUR SYSTEM

Colour system appears.
With each press, the system changes:



- The indication disappears after about 3 seconds.

PAL :	PAL broadcasts.
SECAM :	SECAM broadcasts.
NTSC 3.58 :	NTSC broadcasts.
NTSC 4.43 :	Depends on component type.
AUTO :	Auto selection.

Notes:
- AUTO cannot be selected when tuned to TV mode preset channels 1 to 59.
- AUTO does not function properly for poorly received broadcasts or abnormally recorded sources. If AUTO selection prevents normal picture colour reproduction, switch to PAL, SECAM, NTSC 3.58 or NTSC 4.43.
- For AV-21TE or AV-14TE, NTSC 3.58 or NTSC 4.43 can only be selected in VIDEO mode.

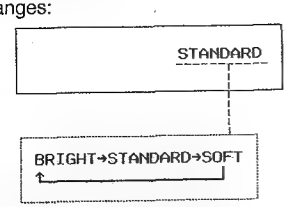
Picture mode selection

Choose from among three preset picture modes (BRIGHT, STANDARD, SOFT) for instant picture settings.

1. Press remote PICTURE MODE key.

PICTURE MODE

Picture mode appears.
With each press, the mode changes:



- The indication disappears after about 3 seconds.

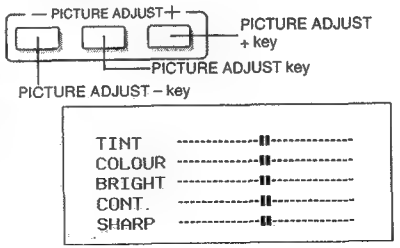
BRIGHT:
Heightens contrast and sharpness.
STANDARD:
Standardises picture adjustments.
SOFT:
Softens contrast and sharpness.

Notes:
- Each mode settings cannot be adjusted.
- See right for user picture adjustments.

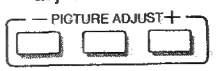
User picture adjustments

Picture tone can be adjusted to the viewer's liking.

1. Press remote PICTURE ADJUST key.
Scales appear.



2. Repeat pressing to select a scale (item). Then press PICTURE ADJUST – or + to adjust the level.
Repeat step 2 to make required adjustments.



–	*Item*	+
Reddish	TINT (tint)	Greenish
Lighter	COLOUR (colour depth)	Deeper
Darker	BRIGHT (brightness)	Brighter
Lower	CONT. (contrast)	Higher
Softer	SHARP (sharpness)	Sharper

- **Now setting is complete.**
Scales disappear after about 3 seconds.

Note:
- TINT (tint) is only available for NTSC 3.58 or 4.43 sources.

OTHER CONTROLS

Display status

Continuous display of a preset channel number or VIDEO mode indication is possible.

1. Press remote DISPLAY key.

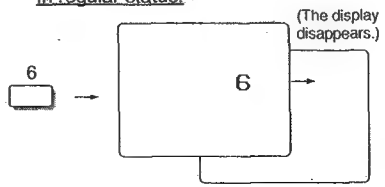
DISPLAY

With each press, status alternates between:

Regular display ⟷ **Continuous display**

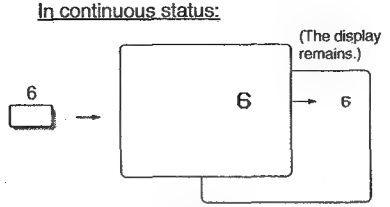
Example: When tuned to preset channel 6

In regular status:



- The number is displayed, then disappears after about 3 seconds.

In continuous status:



- The number is displayed and remains on screen thereafter.

Note:
- Continuous display is only possible for either indication of a currently tuned-to channel number or VIDEO mode.

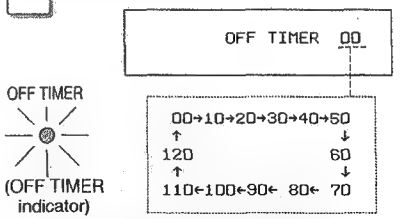
Off-timer setting

Programmes the TV to turn off automatically at a specified time, so the viewer can doze off without worrying about leaving the TV on all night.

1. Repeat pressing remote OFF TIMER key.

OFF TIMER

OFF TIMER time appears.
Select a required setting time.



With each press, the number of minutes indicated increases by another 10-minute interval.

- Selection is displayed, then disappears after about 3 seconds. OFF TIMER activates automatically.

OFF TIMER indicator:
Glows orange to indicate when activated.
Goes off to indicate when deactivated.

To display OFF TIMER remaining time:
With no indication on screen, press OFF TIMER key once.
To cancel OFF TIMER:
Repeat pressing OFF TIMER key until the display reads 00.

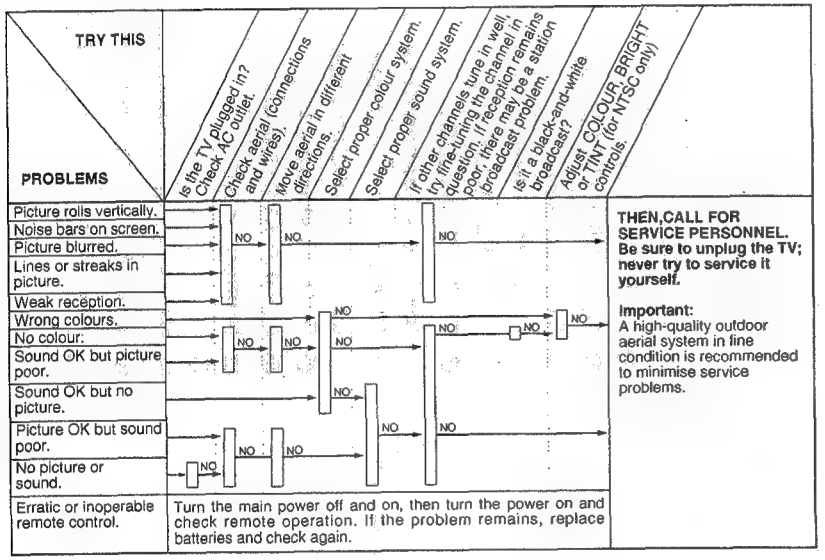
Notes:
- One minute before the switch-off time is reached, GOOD NIGHT ! appears on screen.
- OFF TIMER does not turn the main power off.
- Each time OFF TIMER turns the power off, its setting is automatically released.

TROUBLESHOOTING

Users may mistakenly believe the TV does not work normally, although the problem may be as simple as the TV not being plugged in or the aerial being misdirected. Before calling for service, be sure to check the following:

IMPORTANT:

Be sure to review all instructions at first. Then check according to the following chart:



Note:

- In rare cases, the TV might become inoperable normally due to noise or interference from external equipment. If this occurs, turn the main power off and unplug the TV. Then plug it in and turn the main power on again to operate.

The following are normal and are NOT TV malfunctions:

- When touching the screen surface, you might feel a slight charge of harmless static electricity generated by the picture tube.
- The TV may emit a crackling sound due to a sudden change in temperature. This may pose no problem as far as picture or sound is concerned.
- When a bright still image (of a white dress, e.g.) appears on screen, the image may be coloured. This problem occurs in all picture tubes. As the bright image disappears, the colouration disappears.

SPECIFICATIONS

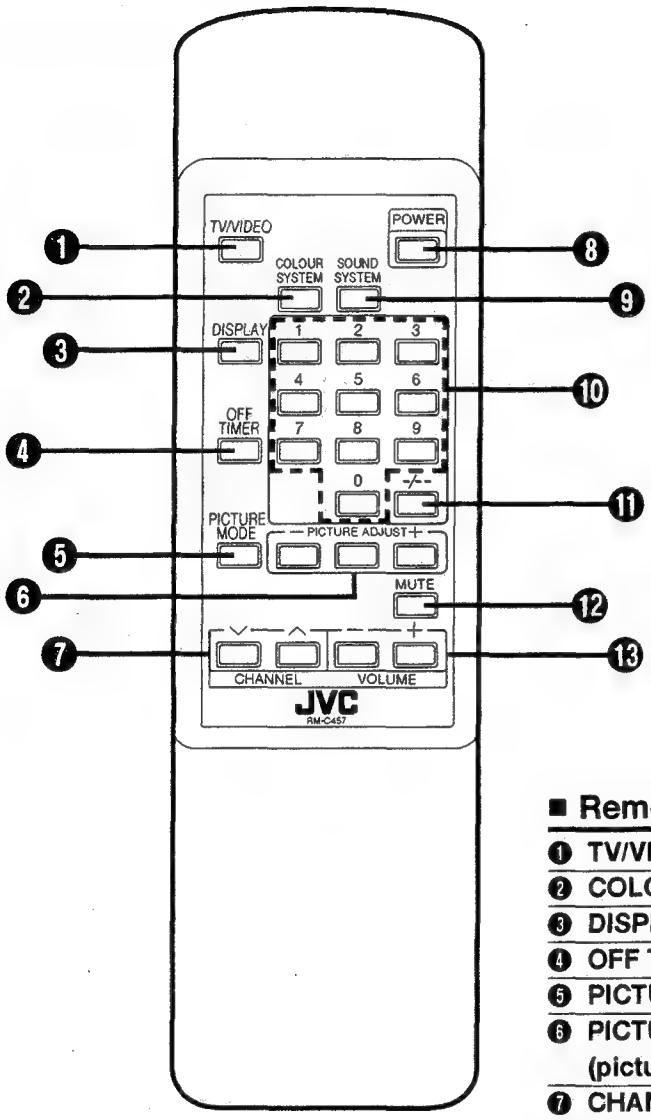
Model	AV-21ME	AV-21TE	AV-14ME	AV-14TE
TV RF systems	B, G, I, D, K, K1, M	B, G, I, D, K, K1	B, G, I, D, K, K1, M	B, G, I, D, K, K1
Colour systems	PAL, SECAM, NTSC	PAL, SECAM * NTSC playback possible in VIDEO mode	PAL, SECAM, NTSC	PAL, SECAM * NTSC playback possible in VIDEO mode
Channels and frequencies	VHF low channel (VL): 46.25 – 168.25 MHz VHF high channel (VH): 175.25 – 463.25 MHz UHF channel (U): 471.25 – 863.25 MHz ■ Receives cable channels of mid band (X – Z, S1 – S10), super band (S11 – S20) and hyper band (S21 – S41).			
Power requirements	120 – 240 V AC, 50/60 Hz (operating: 90 – 260 V AC, 50/60 Hz)			
Power consumption	110 W maximum 80 W average		75 W maximum 55 W average	
Screen size (measured diagonally)	Picture tube: 55 cm Visible area: 51 cm		Picture tube: 36 cm Visible area: 34 cm	
Audio power output	Music power: 5.5 W Effective: 3 W (monaural)		Music power: 2.7 W Effective: 2 W (monaural)	
Speaker size Number of speaker	5 x 9 cm oval 2 pieces		8 cm round 1 piece	
RF input	Aerial (VHF/UHF) socket: 75Ω unbalanced			
External inputs/outputs	■ VIDEO INPUT terminal (RCA pin) x 1 ■ AUDIO INPUT terminal (RCA pin) x 1 ■ VIDEO OUTPUT terminal (RCA pin) x 1 ■ AUDIO OUTPUT terminal (RCA pin) x 1			
External dimensions (W x H x D)	504 x 452 x 491 mm		366 x 323 x 375 mm (excluding rod aerial)	
Mass	21.1 kg		9.5 kg	
Provided accessories	■ Remote control unit (RM-C457) x 1 ■ AA/R6/UM-3 dry battery (for remote-unit testing) x 2		■ Remote control unit (RM-C457) x 1 ■ AA/R6/UM-3 dry battery (for remote-unit testing) x 2 ■ Rod aerial x 1 ■ Matching aerial adapter x 1	

E. & O.E. Design and specifications subject to change without notice.

• REMOTE KEYS

For controls and connectors, see page 2.
For operation, see specified pages.

■ Remote control



■ Remote control

- ❶ TV/VIDEO key ····· p. 5, 8, 9
- ❷ COLOUR SYSTEM key ····· p. 10
- ❸ DISPLAY key ····· p. 12
- ❹ OFF TIMER key ····· p. 12
- ❺ PICTURE MODE key ····· p. 11
- ❻ PICTURE ADJUST (picture adjustment) keys ····· p. 11
- ❼ CHANNEL ∨/∧ (descending/ ascending channel selection) keys ····· p. 8
- ❽ POWER standby key ····· p. 5, 8
- ❾ SOUND SYSTEM key ····· p. 7, 10
- ❿ Numeric keys ····· p. 8
- ⓫ –/-- key ····· p. 8
- ⓬ MUTE (sound muting) key ····· p. 10
- ⓭ VOLUME –/+ (decreasing/ increasing volume control) keys ····· p. 8

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power supply cord.
2. Remove the eight screws marked Ⓐ as shown in Fig. 1.

* When reinstalling the rear cover, carefully push it inward after inserting the main board into the rear cover groove.

REMOVING THE MAIN PW BOARD AND AV BOARD

- After removing the rear cover.

1. Withdraw the MAIN PW board backward along the rail.(Fig. 2) (If necessary, take off the wire clamp and connectors,etc.)
2. Remove the one screw marked Ⓑ as shown in Fig.1.
3. Remove the claws marked Ⓐ by widening slightly in the direction of arrow as shown in Fig.3.
4. Remove the AV BOARD in the direction of arrow marked Ⓑ as shown in Fig.3.

SETTING UP THE CHASSIS FOR CHECK / REPAIR

* As shown in Fig. 4, set the removed chassis upright.
When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT SOCKET PW board and the MAIN PW board.

WIRE CLAMPING AND CABLE TIES

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

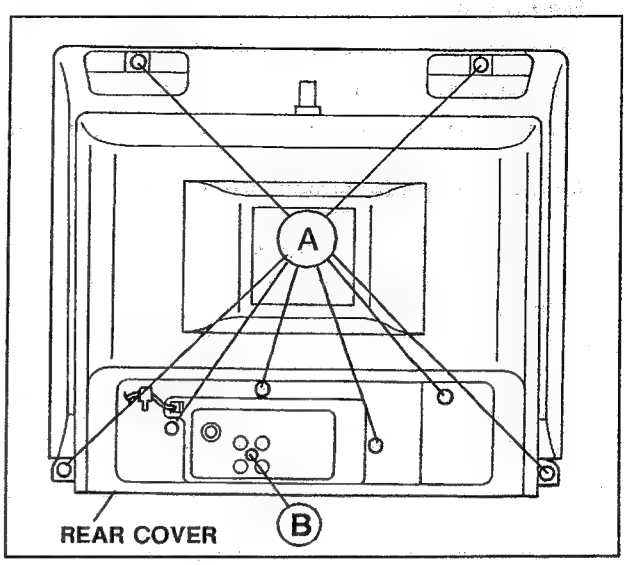


Fig. 1

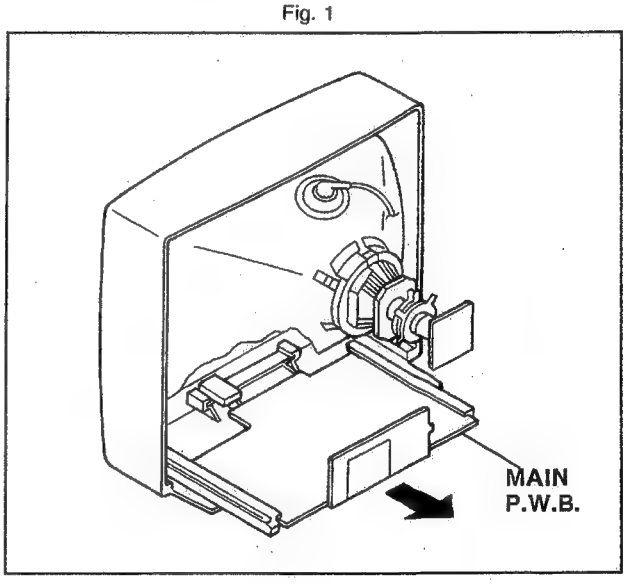


Fig. 2

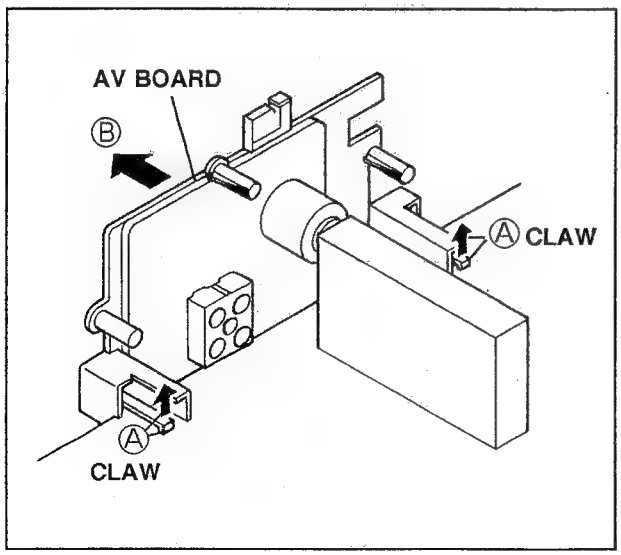


Fig. 3

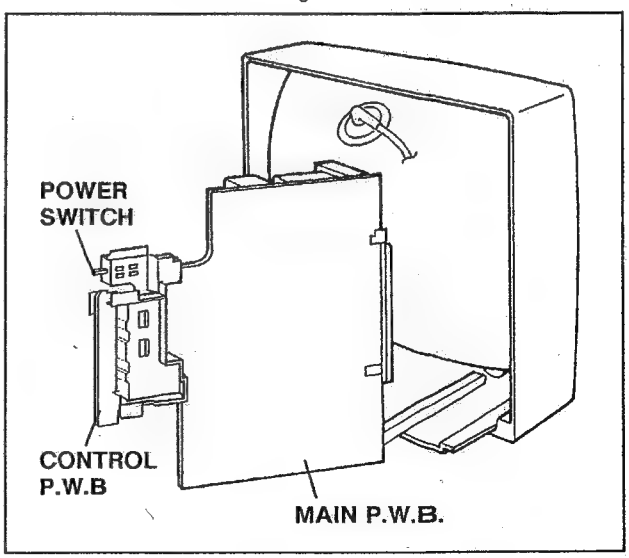


Fig. 4

MEMORY IC REPLACEMENT

1. Memory IC

This model uses a memory (EEPROM) IC.

The memory IC stores data for proper operation of the video and deflection circuits.

When replacing, be sure to use an IC containing this (initial value) data.

2. Memory IC replacement procedure

Procedure	Screen display
(1) **Power off** Switch off the power and disconnect the power cord from the outlet.	
(2) **Replace the memory IC.** Initial value must be entered into the new IC.	
(3) **Power on** Connect the power cord to the outlet and switch on the power.	
(4) **System constant check and setting** 1) Simultaneously press the DISPLAY key and PICTURE MODE key of the remote control unit. 2) The SERVICE MENU screen of Fig. 1 is displayed. 3) While the SERVICE MENU is displayed, again simultaneously press the DISPLAY and PICTURE MODE keys to display the Fig. 2 SYSTEM CONSTANT screen. 4) Refer to the SYSTEM CONSTANT table-1 and check the setting items. Where these differ, select the setting item with the PICTURE ADJUST CENTER key and adjust the setting with the PICTURE ADJUST + / - keys. **[ABL SETTING]** 5) Press the PICTURE ADJUST + / - keys to adjust each item of ABL/REF/STEP in the ABL settings as shown Fig. 3. Then, select the items by the PICTURE ADJUST CENTER key and set the values by the PICTURE ADJUST + / - keys. After setting, press the MUTE key to return to the SYSTEM CONSTANT screen. 6) After adjusting, release the PICTURE ADJUST + / - key to store the setting value. 7) Press the MUTE key twice to return the normal screen.	SERVICE MENU 1. VSM PRESET 2. SUB VSM 3. IF, V/C ADJ. 4. SET UP MENU ← DO NOT SELECT 1-4 : SELECT MUTE : EXIT Fig. 1 SYSTEM CONSTANT ☞ COLOUR MULTI SOUND MULTI INPUT 1 ABL PIC ADJ : SELECT -/+ : OPERATE MUTE : EXIT Fig. 2 ABL SETTING ☞ ABL ON REF 3.6 STEP 4 PIC ADJ : SELECT -/+ : OPERATE MUTE : EXIT Fig. 3
(5) **Receive channel setting** Refer to the **OPERATING INSTRUCTIONS** and set the receive channels as described.	
(6) **User settings** Check the user setting items according to table-2. Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.	
(7) **SERVICE MENU setting** Check the items according to Table-3. Where necessary, refer to SERVICE ADJUSTMENTS and set the items as described.	

TABLE-1 (System Constant settings)

Setting item	Setting content	Setting value
1. COLOUR	→ MULTI → TRIPLE → PAL →	MULTI
2. SOUND	→ MULTI → TRIPLE → DUAL →	MULTI
3. INPUT	→ 1 → 2 →	1
4. ABL	ABL → ON → OFF →	ON
	REF → 2.0 → 2.3 → 2.6 → 3.0 → 3.3 → 3.6 → 3.9 →	3.6
	STEP → 2 → 4 → 6 →	4

TABLE-2 (User setting values)

Setting item	Setting value
1. SUB POWER	ON
2. CHANNEL	1 POSITON
3. CHANNEL PRESET	Set it Item 2.(5) Receive channel setting.
4. VOLUME	20
5. TV / VIDEO	TV
6. ON SCREEN	POSITION DISPLAY
7. OFF TIMER	00
8. PICTURE MODE	BRIGHT

TABLE-3 (Service Menu setting items)

Service Menu		Setting item
1. VSM PRESET		BRIGHT, STANDARD, SOFT
2. SUB VSM	TV	→ PAL → SECAM → NTSC 3.58 → NTSC 4.43 →
	TV (AV position(0 CH))	→ PAL → SECAM → NTSC 3.58 → NTSC 4.43 →
	VIDEO	→ PAL → SECAM → NTSC 3.58 → NTSC 4.43 →
3. IF V/C		1. NOISE ADJ 2. VCO ADJ 3. AUDIO ATT 4. DL TIME ADJ — **Do not Adjust** 5. DRIVE (R) 6. DRIVE (B) 7. CUT OFF (R) 8. CUT OFF (G) 9. CUT OFF (B) 10. H-CENTER 11. PEAK ACL 12. AFC GAIN 13. DOUBLE TRAP — **Do not Adjust** 14. TRAP FINE ADJ

SERVICE ADJUSTMENTS

BEFORE STARTING ADJUSTMENTS

1. **Adjustments of this model are performed by using the remote control unit and in the conventional manner by using adjustable parts.**
2. **Adjustments using the remote control unit are performed on the basis of the initial setting values.**

   However, where an adjustment results in the optimum picture, it may differ from the initial setting value.
3. Before adjusting, switch ON the power of the set and measuring equipment and allow these to warm up at least 30 minutes.
4. Confirm the correct power is supplied.
5. Where the received or input signal is not specified, use the optimum signal for the adjustment.
6. Use care not to disturb adjustable parts (variable resistors, transformers, capacitors, etc.) not specifically mentioned in these adjustment steps.
7. Presetting before adjustment

   Unless otherwise indicated in the adjustment steps, use the remote control unit to preset as follows.

• PICTURE MODE	BRIGHT

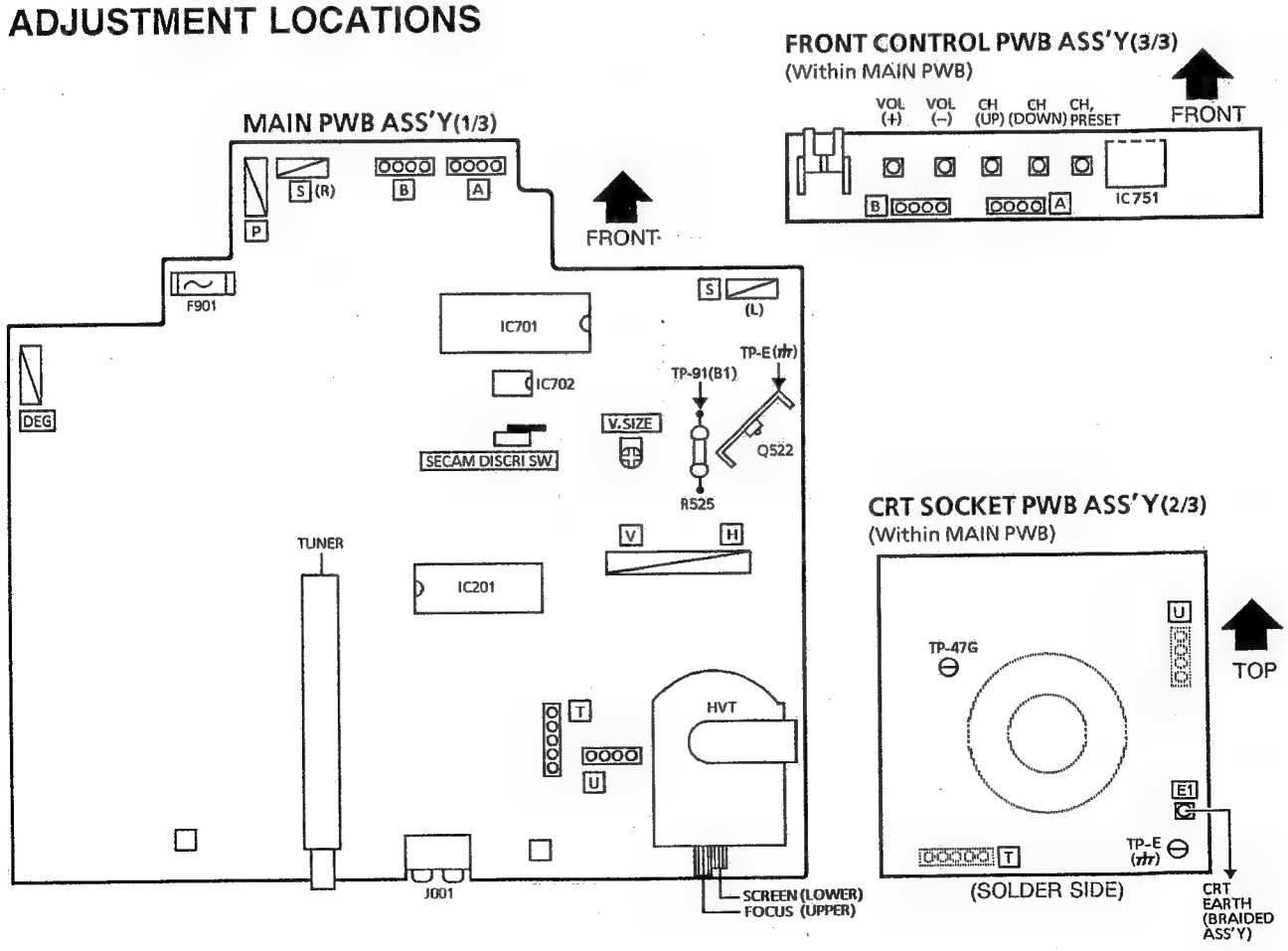
MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal (pattern) generator (PAL, SECAM, NTSC)
4. Remote control unit

ADJUSTMENT ITEMS

Adjustment item	Adjustment item
■ ADJUSTMENTS I	• WHITE BALANCE (Low Light) • WHITE BALANCE (High Light) • VSM PRESET • VIDEO / CHROMA CIRCUIT
• B1 VOLTAGE CHECK • VERTICAL SIZE • HORIZONTAL CENTER • NOISE (RF AGC) • FOCUS • CHROMA TRAP • SECAM DICSRI	■ ADJUSTMENTS II
	■ PURITY, CONVERGENCE

ADJUSTMENT LOCATIONS



SERVICE MENU BASIC OPERATION

1. The SERVICE MENU settings are operated by the remote control unit.

2. SERVICE MENU settings(adjustments) are performed in the following three broad categories.

(1) 1. VSM (Video Status Memory) PRESET

BRIGHT, STANDARD and SOFT value settings.

(2) 2. SUB VSM

SUB VSM value settings for each colour system

(3) 3. IF V/C

IF, VIDEO and CHROMA circuit adjustment value settings.

3. SERVICE MENU basic operation

(1) SERVICE MENU entry

Simultaneously press the DISPLAY and PICTURE MODE keys of the remote control unit. The SERVICE MENU screen indicated in Fig. 1 is displayed.

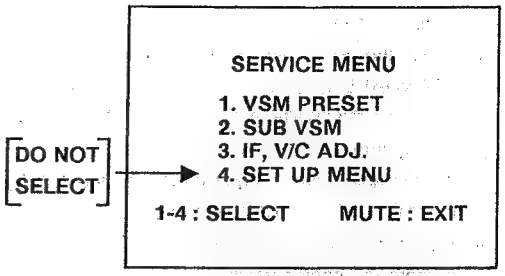


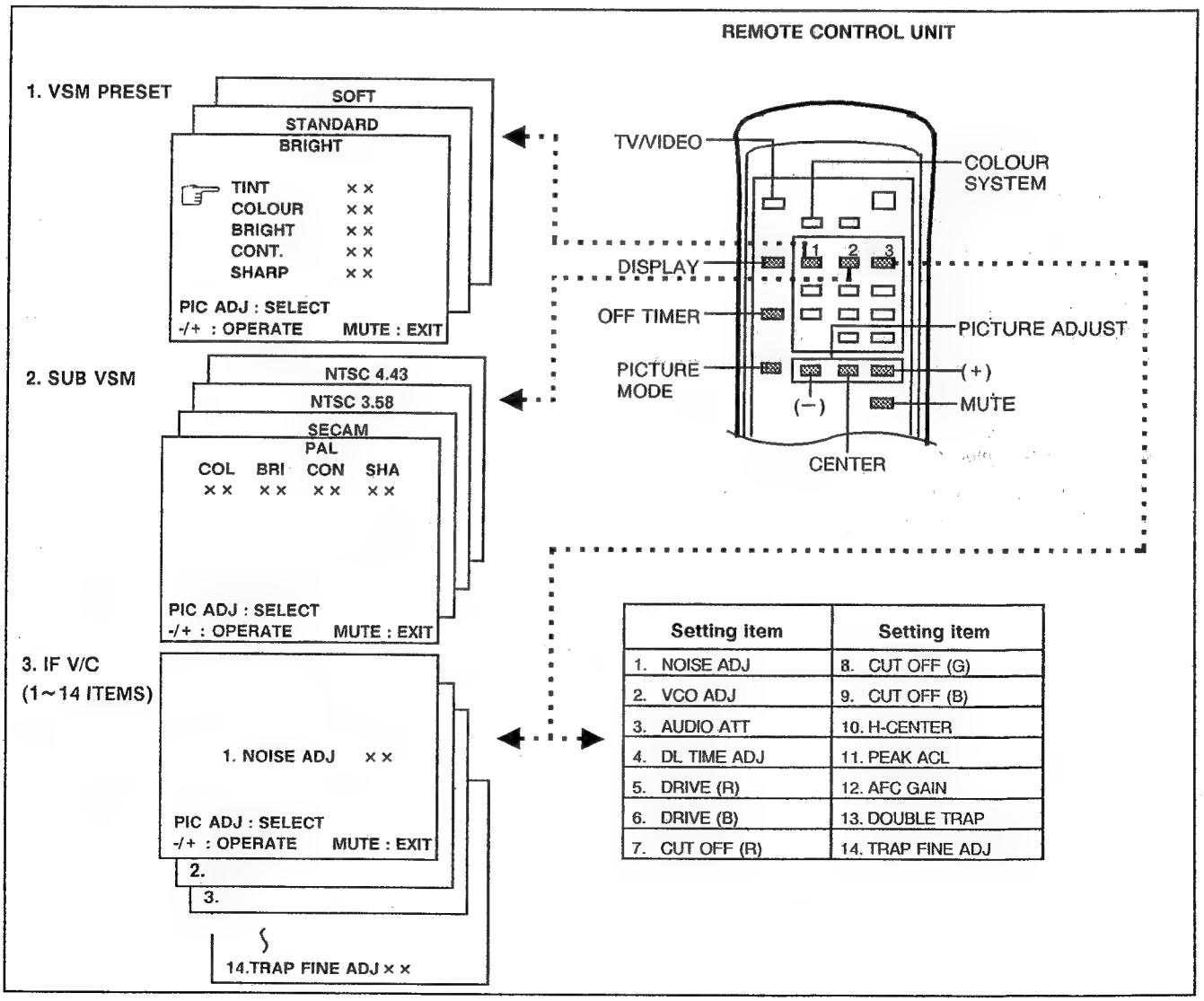
Fig. 1 (SERVICE MENU Screen)

NOTE:
Please don't select 4.SET UP MENU settings.
If selected this category, return to SERVICE MENU screen by press the MUTE key.

(2) SUB MENU screen selection

1) Press the 1, 2 or 3 key of the remote control unit to select the SUB MENU screen within the SERVICE MENU.

SERVICE MENU → SUB MENU 1. VSM PRESET
2. SUB VSM
3. IF V/C



Setting item	Setting item
1. NOISE ADJ	8. CUT OFF (G)
2. VCO ADJ	9. CUT OFF (B)
3. AUDIO ATT	10. H-CENTER
4. DL TIME ADJ	11. PEAK ACL
5. DRIVE (R)	12. AFC GAIN
6. DRIVE (B)	13. DOUBLE TRAP
7. CUT OFF (R)	14. TRAP FINE ADJ

Fig.2 SUB MENU SCREEN

(3) Setting method

1) 1. VSM PRESET

① Press the PICTURE MODE key and select BRIGHT, STANDARD or SOFT.
② Press the PICTURE ADJUST CENTER key to select the setting item.
③ Set the adjustment value for the selected item by pressing the PICTURE ADJUST + / - keys.
④ After adjusting, release the PICTURE ADJUST + / - key to store the setting value.
⑤ To perform setting in succession, repeat steps ①-③.
⑥ Press the MUTE key to return the SERVICE MENU screen.

2) 2. SUB VSM

① Press the COLOUR SYSTEM key and select PAL, SECAM, NTSC 3.58 or NTSC 4.43.
② Press the PICTURE ADJUST CENTER key to select the setting item.
③ Set the adjustment value for the selected item by pressing the PICTURE ADJUST + / - keys.
④ After adjusting, release the PICTURE ADJUST + / - key to store the setting value.
⑤ To perform setting in succession, repeat steps ①-③.
⑥ Press the MUTE key to return the SERVICE MENU screen.

3) 3. IF V/C

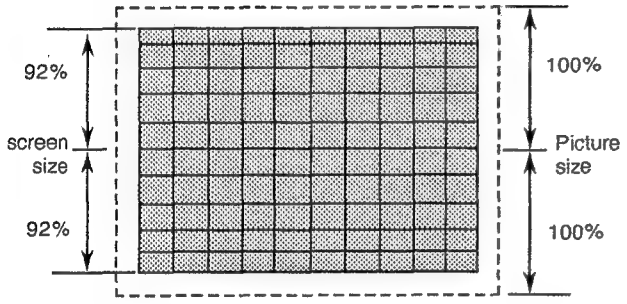
① Press the PICTURE ADJUST CENTER key to select the setting item.
② Set the adjustment value for the selected item by pressing the PICTURE ADJUST + / - keys.
③ After adjusting, release the PICTURE ADJUST + / - key to store the setting value.
④ To perform setting in succession, repeat steps ①-②.
⑤ Press the MUTE key to return the SERVICE MENU screen.

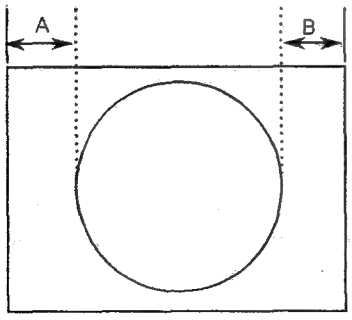
(4) SERVICE MENU release

After completing the settings, return the SERVICE MENU, then again press the MUTE key.

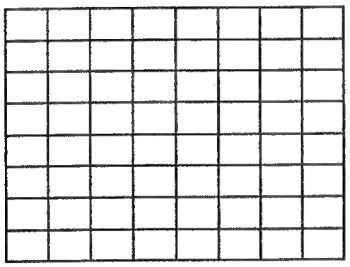
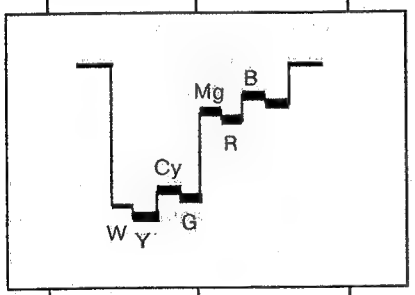
■ ADJUSTMENTS I

Item	Measuring instrument	Test point	Adjustment part	Description
B1 voltage check	• DC Voltmeter	TP-91(B1) TP-E (⏚)		1. Receive a black and white signal (colour off). 2. Connect the DC voltmeter to TP-91(B1) and TP-E (⏚). 3. Confirm that the voltage is DC 114.5V ± 1.5V.
VERTICAL SIZE adjustment	• Signal generator		V. SIZE VR [MAIN PWB]	• PICTURE MODE : STANDARD 1. Receive a crosshatch signal. 2. Adjust the V. SIZE VR to set the screen size to 92%.
HORIZONTAL CENTER adjustment	• Signal generator • Remote control unit		10. H. CENTER	1. Receive a 50Hz vertical frequency circle pattern signal. 2. From the SERVICE MENU, select 3. IF V/C. 3. Select 10. H-CENTER. 4. Refer to the figure and use the PICTURE ADJUST + / - keys to equalize the widths of portions A and B (A = B). 5. Receive a 60Hz vertical frequency circle pattern signal. 6. In the same manner, equalize the widths of portions A and B(A = B).





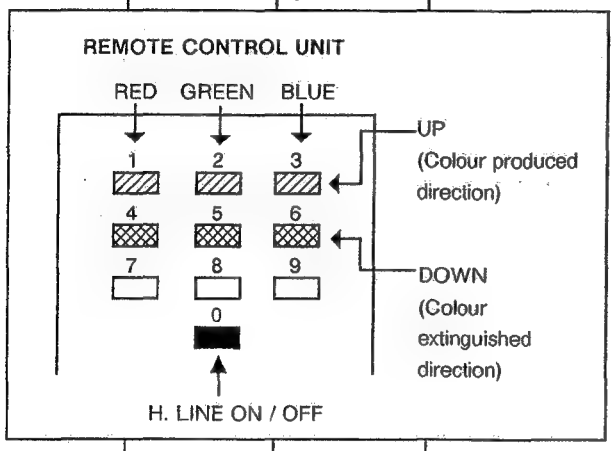
Setting (Adjustment) item	Variable range	Initial setting value
10. H-CENTER	0~15	50Hz : 6 60Hz : 9

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>NOISE (RF AGC) adjustment</td><td>• Remote control unit</td><td></td><td>1. NOISE ADJ</td><td>1. Receive a broadcast signal.
2. From the SERVICE MENU, select 3. IF V/C.
3. Select 1. NOISE ADJ.
4. Use the PICTURE ADJUST + / - keys and adjust to eliminate noise from the picture.
* When noise disappears, release + / - keys.
5. Check the other channels and confirm absence of abnormality.
<table><tr><th>Setting (Adjustment) item</th><th>Variable range</th><th>Initial setting value</th></tr><tr><td>1. NOISE ADJ</td><td>0~63</td><td>38</td></tr></table></td></tr>
<tr><td>FOCUS adjustment
  </td><td>• Signal generator</td><td></td><td>FOCUS VR [built-in HVT]</td><td>1. Receive a crosshatch signal.
2. Refer to the figure and set the control to the most counterclockwise position (to decrease the voltage) where the vertical and horizontal lines are as thin and clear as possible.
3. Darken the screen and check for correct focus.
* The final adjustment of the CONVERGENCE should always be done after focus adjustment.</td></tr>
<tr><td>CHROMA TRAP adjustment
  </td><td>• Signal generator
• Remote control unit
• Oscilloscope</td><td>TP-47G
TP-E(⏚)</td><td>14. TRAP FINE ADJ</td><td>1. Receive a PAL full field colour bar signal (75% white).
2. Connect an oscilloscope to TP-47G and TP-E(⏚).
3. From the SERVICE MENU, select 3. IF V/C.
4. Select 14. TRAP FINE ADJ.
5. Use the PICTURE ADJUST + / - keys to switch between HIGH and LOW so as to further reduce the waveform chroma component (Y~B).
6. Input the NTSC video full field colour bar signal (75% white) from the video input terminal.
7. In the same manner, repeat steps 5.
<table><tr><th>Setting (Adjustment) item</th><th>Setting value</th></tr><tr><td>14. TRAP FINE ADJ</td><td>HIGH / LOW</td></tr></table></td></tr>
<tr><td>SECAM DISCRI adjustment</td><td></td><td></td><td>SECAM DISCRI SW [MAIN PWB]</td><td>• Adjustment of WHITE BALANCE (High Light) should be accomplished preliminarily.

1. Receive the SECAM broadcast signal.
2. Switch the SECAM DISCRI SW so that an optimum flesh colour can be obtained.</td></tr>
</table>

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>WHITE BALANCE (Low Light) adjustment</td><td>• Signal generator
• Remote control unit</td><td></td><td>7. CUT OFF (R)
8. CUT OFF (G)
9. CUT OFF (B)

SCREEN VR (In HVT)</td><td>1. Receive a black and white signal (colour off).
2. From the SERVICE MENU, select 3. IF V/C.
3. Select 7. CUTOFF(R), 8.CUTOFF (G) and 9. CUTOFF (B), and set each value as indicated in the table.
4. Select one of the modes of above step 3 and press the 0 key of the remote control unit to produce a single horizontal line.
5. Turn the SCREEN VR fully counter-clockwise, then slowly turn it clockwise to where a red, blue or green colour is faintly visible.
6. Use keys 1~6 of the remote control unit and adjust the other two colours to where the single horizontal line appears white.
7. Turn the SCREEN VR to where the single horizontal line glows faintly.
8. Press the 0 key to return the normal screen.

<table>
<tr><th>Setting (Adjustment) item</th><th>Variable range</th><th>Initial setting value</th></tr>
<tr><td>7. CUTOFF (R)</td><td>0~255</td><td>128</td></tr>
<tr><td>8. CUTOFF (G)</td><td>0~255</td><td>128</td></tr>
<tr><td>9. CUTOFF (B)</td><td>0~255</td><td>128</td></tr>
</table>

• When an irregular screen is caused by pressing a wrong key, turn off the MAIN POWER SW and turn it on again to restart adjustment.</td></tr>
<tr><td>WHITE BALANCE (High Light) adjustment</td><td>• Signal generator
• Remote control unit</td><td></td><td>5. DRIVE (R)
6. DRIVE (B)</td><td>1. Receive a black and white signal (colour off).
2. From the SERVICE MENU, select 3. IF V/C.
3. Select 5. DRIVE (R) and 6. DRIVE (B).
4. Use the PICTURE ADJUST + / - keys to produce a white screen.

<table>
<tr><th>Setting (Adjustment) item</th><th>Variable range</th><th>Initial setting value</th></tr>
<tr><td>5. DRIVE (R)</td><td>0~63</td><td>32</td></tr>
<tr><td>6. DRIVE (B)</td><td>0~63</td><td>32</td></tr>
</table></td></tr>
<tr><td>VSM PRESET adjustment</td><td>• Remote control unit</td><td></td><td>TINT
COLOUR
BRIGHT
CONT.
SHARP</td><td>1. From the SERVICE MENU, select 1. VSM preset.
2. Select BRIGHT with PICTURE MODE key.
3. Refer to the table and use the PICTURE ADJUST + / - keys to set the setting values from TINT to SHARP as indicated.
4. In the same manner, select and perform settings for the STANDARD and SOFT VSM modes.

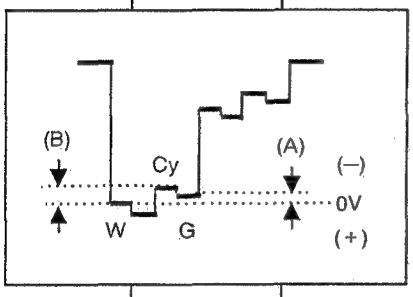
<table>
<tr><th colspan="2" rowspan="2">Setting item</th><th colspan="3">VSM MODE (PICTURE MODE)</th></tr>
<tr><th>BRIGHT</th><th>STANDARD</th><th>SOFT</th></tr>
<tr><td>TINT</td><td>SETTING VALUE</td><td>30</td><td>30</td><td>30</td></tr>
<tr><td>COLOUR</td><td>SETTING VALUE</td><td>15</td><td>15</td><td>15</td></tr>
<tr><td>BRIGHT</td><td>SETTING VALUE</td><td>15</td><td>15</td><td>15</td></tr>
<tr><td>CONT.</td><td>SETTING VALUE</td><td>30</td><td>24</td><td>17</td></tr>
<tr><td>SHARP</td><td>SETTING VALUE</td><td>20</td><td>15</td><td>10</td></tr>
</table>
VSM Preset setting values</td></tr>
</table>

Item	Measuring instrument	Test point	Adjustment part	Description
VIDEO and CHROMA CIRCUITS adjustment	• Remote control unit		TINT COLOUR BRIGHT CONTRAST SHARP	
1. SUB VSM SETTING				• From the PICTURE(VSM) MODE, select [BRIGHT]. 1. From the SERVICE MENU, select 2. SUB VSM. 2. Set the COLOUR SYSTEM key to TV PAL mode. 3. Set the PAL SYSTEM initial setting values for COLOUR, BRIGHT, CONT. and SHARP as indicated in the table by using the PICTURE ADJUST +/- keys. 4. Next, in the same manner, set the SECAM SYSTEM COLOUR, and the NTSC 3.58 SYSTEM COLOUR and TINT. 5. Press the TV / VIDEO key to switch from the TV to the VIDEO mode. 6. Refer to the table and set the VIDEO mode SHARP item initial values as indicated. * Items in parentheses ( ) are automatically set to below table when the NTSC COLOUR and TINT are set. * Arrows indicate the SECAM and NTSC initial setting values are the same as PAL.
2. BRIGHT setting			BRIGHT	1. If BRIGHT is not optimum at the SUB VSM initial setting value, fine adjust so that optimum is obtained with the SUB VSM BRIGHT.
3. CONT. setting			CONTRAST	1. If CONTRAST is not optimum at the SUB VSM initial setting value, fine adjust so that optimum is obtained with the SUB VSM CONTRAST.

Setting item		COLOUR SYSTEM			
		PAL	SECAM	NTSC	
				3.58	4.43
TINT INITIAL SETTING VALUES	TV	—	—	41	(-4)
	VIDEO			(±0)	(-1)
COLOUR INITIAL SETTING VALUE		33	←	30	(-1)
BRIGHT INITIAL SETTING VALUE		17	←	←	←
CONTRAST INITIAL SETTING VALUE		30	←	←	←
SHARP INITIAL SETTING VALUES	TV	9	←	←	←
	VIDEO	9	←	←	←

SUB-VSM initial setting values

Item	Measuring instrument	Test point	Adjustment part	Description
4. COLOUR setting	• Signal generator • Oscilloscope • Remote control unit	TP-47G TP-E(⏚)	COLOUR (PAL~NTSC)	**[Adjustment without measuring instruments]** 1. If COLOUR is not optimum at the SUB VSM initial setting value, fine adjust so that optimum is obtained with the SUB VSM COLOUR.
			PAL COLOUR	**[Adjustments using test instruments]** (PAL COLOUR) 1. Receive a PAL full field colour bar signal (75% white). 2. Set the SUB VSM PAL colour initial setting value as indicated in the table. 3. Connect an oscilloscope to TP-47G and TP-E(⏚). 4. Refer to the figure and adjust the SUB VSM PAL COLOUR so that value (A) is 0V.
			SECAM COLOUR	(SECAM COLOUR) 5. Receive a SECAM full field colour bar signal (75% white). 6. Set the SUB VSM SECAM COLOUR initial setting value as indicated in the table. 7. Refer to the figure and adjust the SUB VSM SECAM COLOUR so that value (A) is +4V.
			NTSC 3.58 COLOUR	(NTSC 3.58 COLOUR) 8. Receive an NTSC 3.58 full field colour bar signal (75% white). 9. Set the SUB VSM NTSC 3.58 COLOUR initial setting value as indicated in the table. 10. Refer to the figure and adjust the SUB VSM NTSC 3.58 COLOUR so that value (A) is -1V.
				(NTSC 4.43 COLOUR) This is automatically set when NTSC 3.58 COLOUR is set.
5. TINT setting	• Signal generator • Oscilloscope • Remote control unit	TP-47G TP-E(⏚)	NTSC 3.58 TINT	**[Adjustment without measuring instruments]** 1. If TINT is not optimum at the SUB VSM initial setting value, fine adjust so that optimum is obtained with the SUB VSM NTSC 3.58 TINT.
			NTSC 3.58 TINT	**[Adjustments using test instruments]** (NTSC 3.58 TINT) 1. Receive an NTSC 3.58 full field colour bar signal(75% white). 2. Set the SUB VSM NTSC 3.58 TINT initial setting value as indicated in the table. 3. Connect an oscilloscope to TP-47G and TP-E(⏚). 4. Refer to the figure and adjust the SUB VSM NTSC 3.58 TINT so that value (B) is -3V.
				(NTSC 4.43 TINT) This is automatically set when NTSC 3.58 TINT is set.



■ ADJUSTMENTS II

Ordinarily, avoid changing the items indicated in the table.

SERVICE MENU 3. IF V/C setting items

Setting item	Setting content / range	Fixed value
2. VCO ADJ	0~63	32
3. AUDIO ATT	0~127	73
11. PEAK ACL	150IRE / 120 IRE	150IRE
12. AFC GAIN	NORMAL / HIGH	HIGH
13. DOUBLE TRAP	SINGLE / DOUBLE	SINGLE

Setting item	Setting range	TV / VIDEO	Fixed value			
			PAL	SECAM	NTSC 3.58	NTSC 4.43
4. DL TIME ADJ	0~7	TV	4	2	4	2
		VIDEO	4	7	4	4

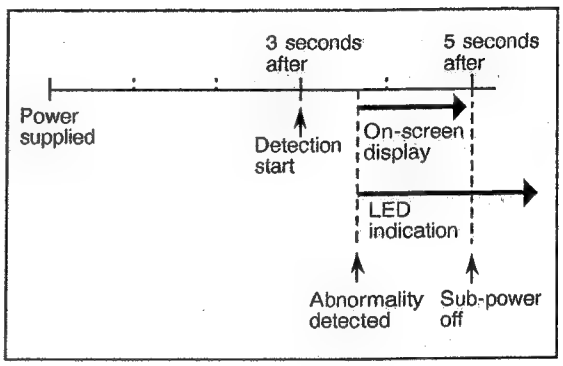
■ SELF CHECK FUNCTIONS

1. Outline

This model includes a CRT (Cathode Ray Tube) NECK protector function for cutting off the sub-power in event of a malfunction.
The self check function also informs of the malfunction by flashing off-timer LED and the on-screen display.
The malfunction is detected according to the state of the control line input connected to the main CPU.

2. Self check indicating function

The CRT NECK protector function begins detection 3 seconds after power is supplied.
During the next 2 seconds, even if an abnormality is detected, the sub-power is not cutoff.
The abnormality is indicated during this period by the on-screen display and flashing LED.
In event a malfunction is detected and 5 seconds elapse after supply of power, the sub-power is cutoff immediately.
At this time, the on-screen display is not produced, but the LED flashes.



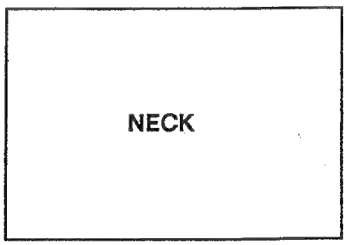
[On-screen display]

1. NECK is displayed on the screen.

Note : OCP or X-RAY may also be displayed, but these are due to operating error and are unrelated.

[Off-timer LED indication]

1. The off-timer LED flashes at 2 second intervals.



(SCREEN)

3. Contents of Self check

Check item	Display	Detected contents	Detection method	Abnormality state
CRT NECK protector (Also detected if the power supply line output from the HVT (High voltage Transformer) is grounded or shorted)	NECK	Potential drop of the vertical circuit S-correction capacitor (C413) is detected to prevent burn damage to the CRT NECK. (Grounding of shorting of the power supply output from the HVT to the vertical circuit, and the small signal power supply is also detected.)	The main CPU detects at 30 ms intervals for 16 cycles. If NG is detected 9 or more times out of 16, a malfunction is interpreted.	During an abnormality the sub-power is cutoff. The remote controller power key operation is not recognized and sub-power off is maintained until the power cord is unplugged and reinserted, or the mainframe power switch is operated off/on.

PURITY, CONVERGENCE

PURITY ADJUSTMENT

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedge.
4. Input a Green Raster signal from the Signal Generator, and turn the screen to Green Raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig. 3)
7. Adjust the gap between two lugs so that the Green Raster will come into the center of the screen. (Fig. 4)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and Blue Raster signals, and make sure that purity is properly adjusted.

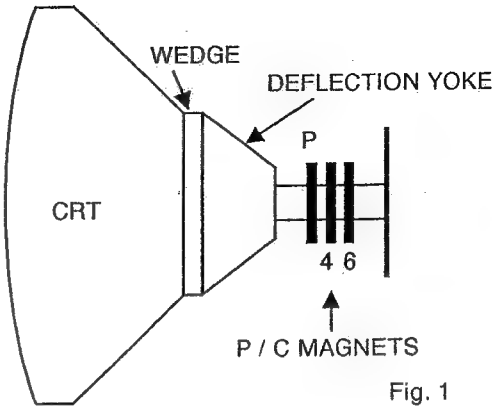


Fig. 1

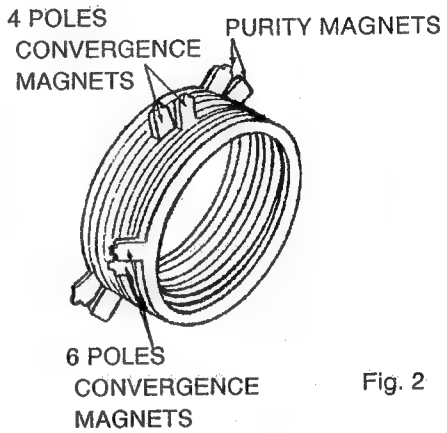
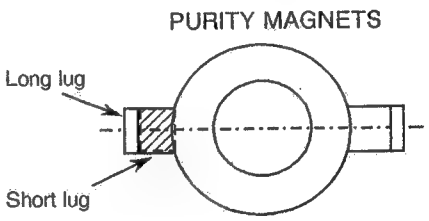


Fig. 2



Bring the long lug over the short lug and position them horizontally.

Fig. 3

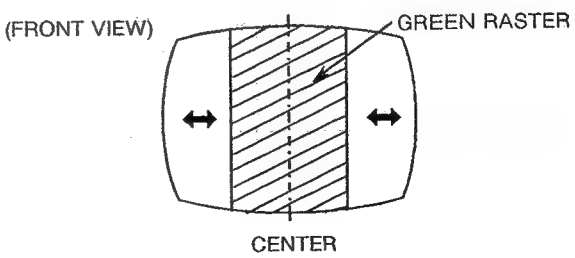


Fig. 4

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

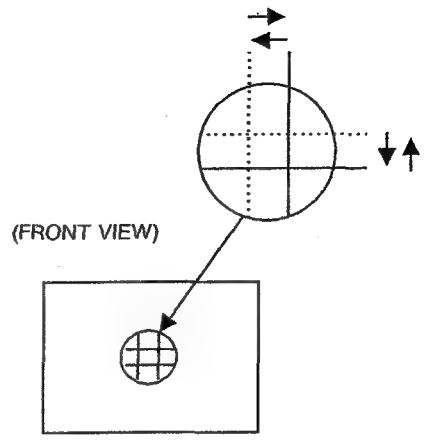


Fig. 1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

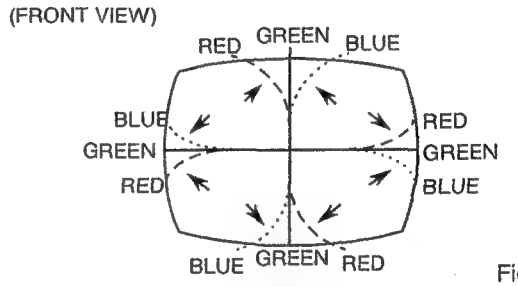


Fig. 2

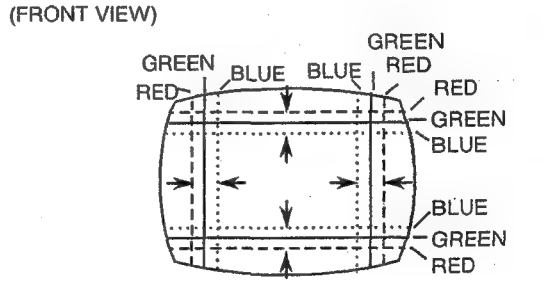


Fig. 3

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines — in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .
- As a rule, the resistors and capacitors which are indicated as shown in "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board .
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" .

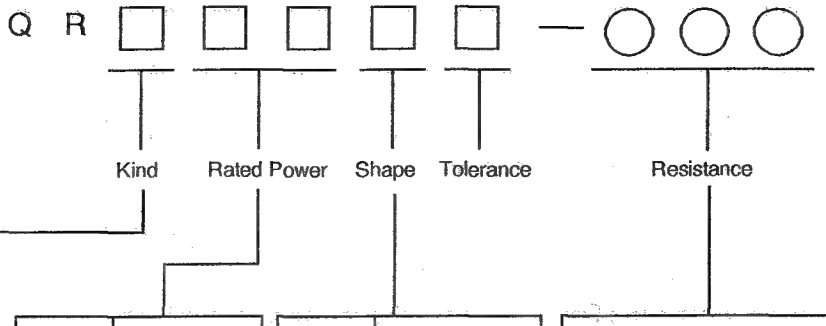
ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



Symbol	Part Name
C	COMP.R
D	C R
S	CH MG R

Symbol	Rated Power
0 1	1 w
1 2	1/2 w
1 4	1/4 w
1 6	1/6 w
1 8	1/8 w

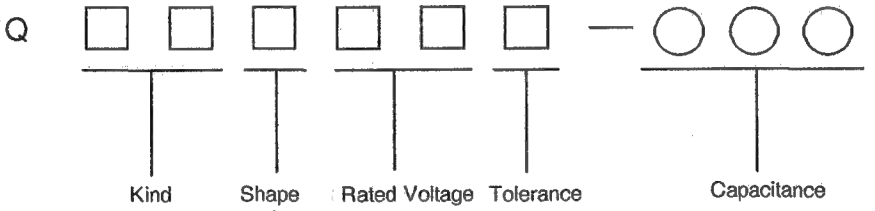
Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
please note that,in case of resistance less than 10 Ω, a letter "R"will be effective as point.

EX.

2.2 Ω	=		2R2
470 Ω	=	47×10^{1} →	471
150kΩ	=	15×10^{4} →	154

■ CAPACITOR



Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

5Figure / 6Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that,in case of capacitance less than 10 pF a letter "R" will be effective as point.

EX

5pF	=		5R0
1000pF	=	10×10^{2} →	102
47μF	=	47×10^{6} →	476

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

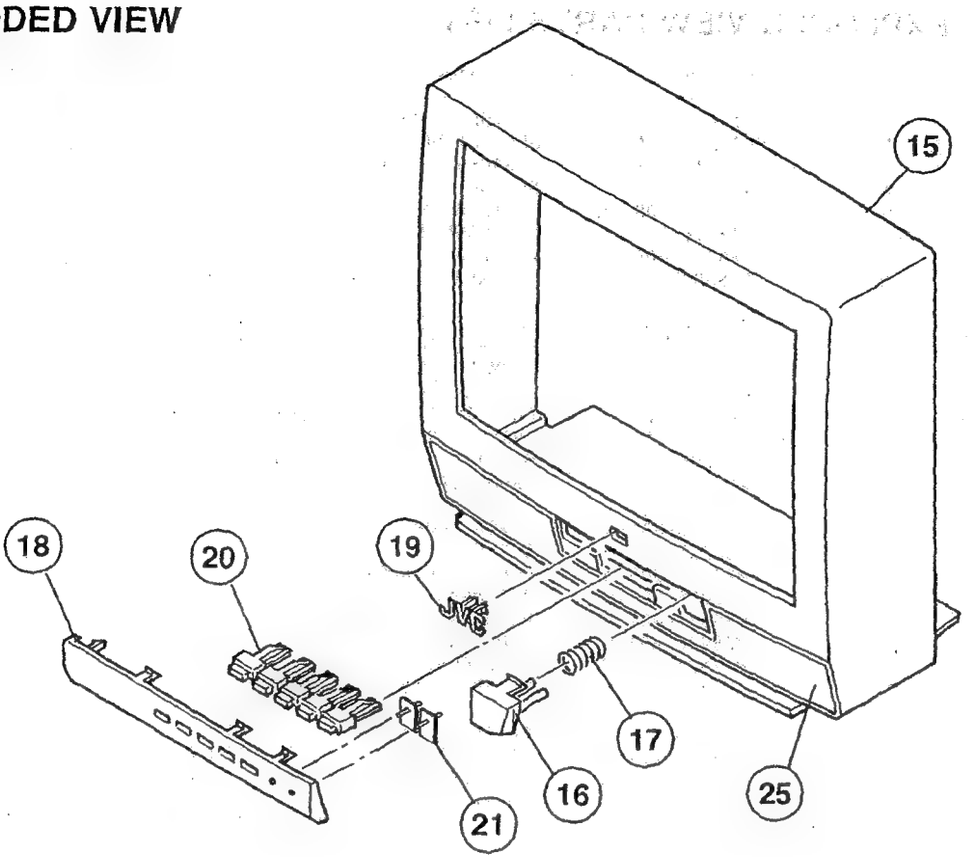
EXPLODED VIEW PARTS LIST

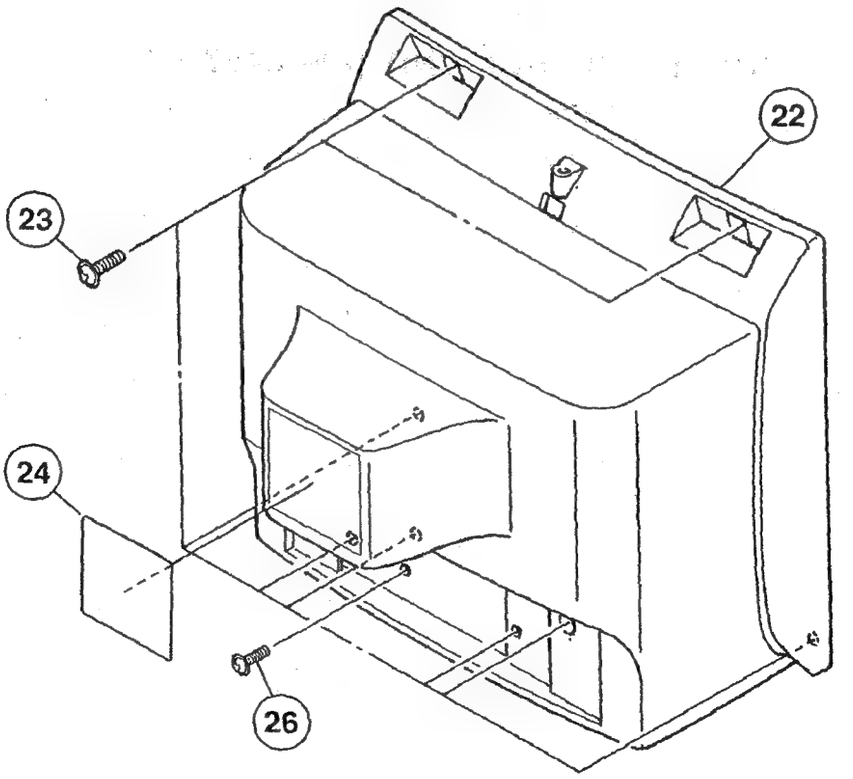
⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	1	A51LEC098X	PICTURE TUBE	V01	
⚠	2	CE20298-00A	DEFLECTION YOKE	DY01	
⚠	3	CELD029-003J6	DEGAUSSING COIL	L01	
	4	A48457-3-H	SPRING		
	5	CHGB0016-0B-FH	BRAIDED ASSY		
	6	CE42378-00A	P.C.MAGNET		
	7	CE40764-00A	WEDGE ASSY	(×3)	
	8	CEBSS09D-04KJ2	SPEAKER	SP01,SP02	
⚠	9	QMP73G0-200J5	POWER CORD	AV-21MEN	
⚠	9	QMP73P0-200J5	POWER CORD	AV-21MEN-A	
	10	CM22837-B01-H	TERMINAL BOARD		
	11	CM36131-C01-H	CONTROL HOLDER		
⚠	12	QSP4D21-C05	PUSH SWITCH	S01(POWER SW)	
	13	CM35934-C01-VH	CHASSIS RAIL	(×2)	
⚠	14	CJ28268-00AJ1	H.V.T.	T1521	
⚠	15	CM12519-00F-H	FRONT CABI ASSY		
	16	CM35936-B01-H	POWER KNOB		
	17	CM35235-004-H	SPRING		
	18	CM22748-005-H	CONTROL WINDOW		
	19	CM43094-006-H	JVC MARK		
	20	CM35937-B01-H	PUSH KNOB		
	21	CM35938-A01-H	LED LENS		
⚠	22	CM12521-F01-MH	REAR COVER		
	23	GBSF4016Z-H	W.TAP SCREW	(×8)	
⚠	24	CM22925-001	RATING LABEL	AV-21MEN	
⚠	24	CM22880-002	RATING LABEL	AV-21MEN-A	
	25	CM22887-00A-H	SPEAKER SHEET		
	26	SBSF3010Z-H	TH TAP SCREW		

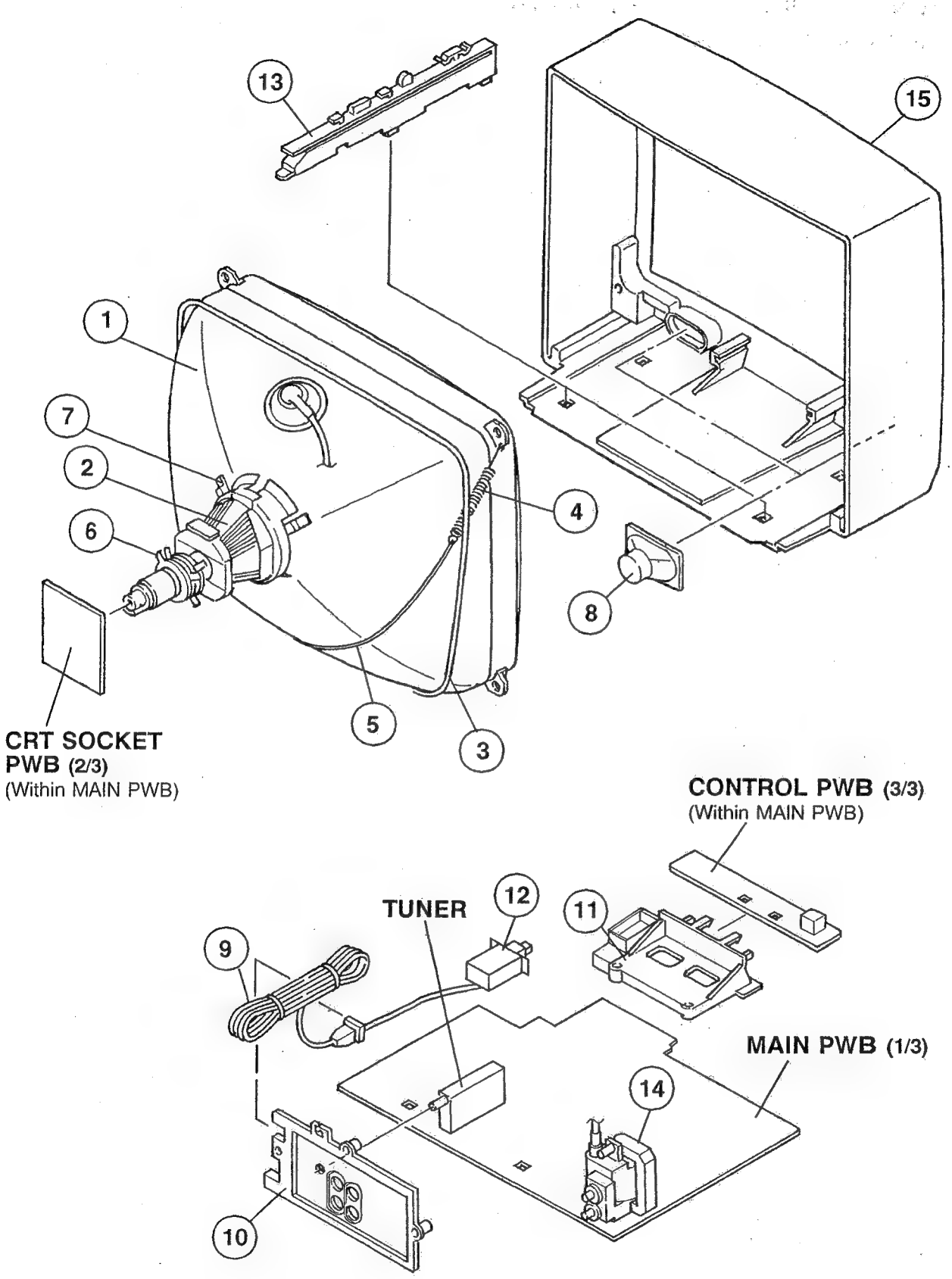
REMOTE CONTROL UNIT (RM-C457-1H)

⚠	Ref.No.	Part No.	Part Name	Description	Local
		BAS110201A	BATTERY COVER		

EXPLODED VIEW






13
15
1
7
2
6
4
8
5
3
CRT SOCKET
PWB (2/3)
(Within MAIN PWB)
CONTROL PWB (3/3)
(Within MAIN PWB)
TUNER
12
11
9
MAIN PWB (1/3)
14
10

PRINTED WIRING BOARD PARTS LIST

MAIN PW BOARD ASS'Y (SCA-1005A-H2)

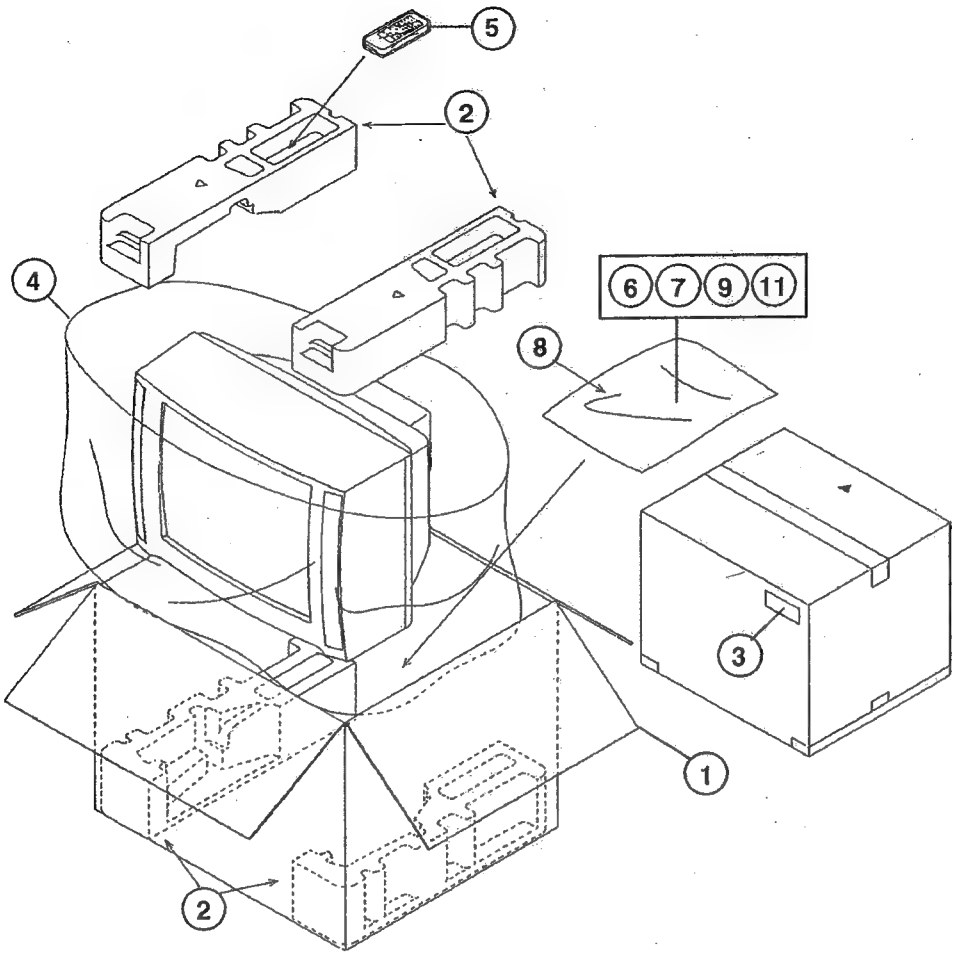
⚠	Symbol No.	Part No.	Part Name	Description			Local
	V A R I A B L E R E S I S T O R						
	R1406	QVPE611-503HZ	V R(V-HEIGHT)	50kΩ B			
	R E S I S T O R						
	R1253	QRD123J-101SX	C R	100 Ω	1/2W	J	
	R1360-62	QRZ0111-152	C R	1.5kΩ	1/2W		
	R1363-65	QRG029J-123A	OM R	12kΩ	2W	J	
	R1501	QRG019J-101S	OM R	100 Ω	1W	J	
	R1521	QRG019J-680S	OM R	68 Ω	1W	J	
	R1524	QRG019J-561S	OM R	560 Ω	1W	J	
	R1525	QRG029J-391A	OM R	390 Ω	2W	J	
⚠	R1541	QRD149J-1R0S	C R	1 Ω	1/4W	J	
	R1542	QRX029J-1R8	MF R	1.8 Ω	2W	J	
	R1543	QRX029J-1R2	MF R	1.2 Ω	2W	J	
	R1544	QRG029J-100	OM R	10 Ω	2W	J	
	R1545	QRG019J-470S	OM R	47 Ω	1W	J	
	R1546	QRG029J-330A	OM R	33 Ω	2W	J	
	R1547	QRG029J-183	OM R	18kΩ	2W	J	
⚠	R1605	QRD129J-4R7S	C R	4.7 Ω	1/2W	J	
	R1613	QRX019J-1R8S	MF R	1.8 Ω	1W	J	
	R1711	QRB089J-682	NETW.R	6.8kΩ	8W	J	
⚠	R1901	QRF104K-3R9	UNF R	3.9 Ω	10W	K	
	R1903	QRG039J-223A	OM R	22kΩ	3W	J	
	R1922	QRM059J-R27	MP R	0.27 Ω	5W	J	
	R1923	QRX029J-8R2A	MF R	8.2 Ω	2W	J	
	R1925	QRG019J-120S	OM R	12 Ω	1W	J	
	R1928	QRG029J-473	OM R	47kΩ	2W	J	
⚠	R1981	QRZ0057-825	C R	8.2MΩ	1W	J	
	C A P A C I T O R						
	C1003	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1005	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1101-06	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1108	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1121	QFV71HJ-104MZ	TF CAP.	0.1μF	50V	J	
	C1122	QFV71HJ-224MZ	TF CAP.	0.22μF	50V	J	
	C1123	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1127	QFV71HJ-104MZ	TF CAP.	0.1μF	50V	J	
	C1128	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1201	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1202	QETC0JM-477Z	E CAP.	470μF	6.3V	M	
	C1302	QFLC1HJ-473MZ	M CAP.	0.047μF	50V	J	
	C1307-08	QFV71HJ-104MZ	TF CAP.	0.1μF	50V	J	
	C1309	QFLC1HJ-223MZ	M CAP.	0.022μF	50V	J	
	C1310-12	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1316	QFV71HJ-104MZ	TF CAP.	0.1μF	50V	J	
	C1317-18	QFV71HJ-474MZ	TF CAP.	0.47μF	50V	J	
	C1403	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1404	QEE61VK-105BZ	TAN.CAP.	1μF	35V	K	
	C1406-07	QETC1VM-107GZ	E CAP.	100μF	35V	M	
	C1504-05	QFLC1HJ-103MZ	M CAP.	0.01μF	50V	J	
	C1506	QFLC1HJ-223MZ	M CAP.	0.022μF	50V	J	
	C1522	QFN31HJ-822ZJ1	M CAP.	8200pF	50V	J	
⚠	C1524	QFZ0117-9801L	MPP CAP.	9800pF	1.5kVH	±2.5%	
⚠	C1525	QFZ0119-514L	MPP CAP.	0.51μF	200V	±3%	
	C1526	QEHB2CM-476M	E CAP.	47μF	160V	M	
	C1541	QETC2EM-106Z	E CAP.	10μF	250V	M	
	C1543	QETB1VM-108	E CAP.	1000μF	35V	M	
	C1548	QEHC1EM-476MZ	E CAP.	47μF	25V	M	
	C1551	QETC0JM-227Z	E CAP.	220μF	6.3V	M	
	C1581	QFLC1HJ-473MZ	M CAP.	0.047μF	50V	J	
	C1602	QEN61HM-474Z	BP E CAP.	0.47μF	50V	M	
	C1603	QFN31HJ-102ZJ1	M CAP.	1000pF	50V	J	
	C1607	QFLC1HJ-473MZ	M CAP.	0.047μF	50V	J	

⚠	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
	C1622	QFN31HJ-562ZJ1	M CAP.	5600 p F 50V J	
	C1626	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
	C1628	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
	C1655	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
	C1703	QFN31HJ-102ZJ1	M CAP.	1000 p F 50V J	
	C1707	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V J	
	C1708	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
	C1711	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V J	
	C1716	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
	C1717	QFLC1HJ-473MZ	M CAP.	0.047 μ F 50V J	
	C1804	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
⚠	C1901	QFZ9040-224N	MF CAP.	0.22 μ FAC275V M	
⚠	C1902	QCZ9057-472M	C CAP.	4700 p FAC400V Z	
⚠	C1903	QCZ9057-472M	C CAP.	4700 p FAC400V Z	
⚠	C1904	QCZ9057-472M	C CAP.	4700 p FAC400V Z	
	C1905	QEZ0199-157	E CAP.	150 μ F 400V M	
	C1921	QCZ0122-102U	C CAP.	1000 p F 2kV K	
	C1922	QCZ0122-151U	C CAP.	150 p F 2kV K	
	C1927	QFN31HJ-102ZJ1	M CAP.	1000 p F 50V J	
	C1933	QCZ0122-151U	C CAP.	150 p F 2kV K	
	C1934	QCF22HP-103M	CH C CAP.	0.01 μ F 500V P	
	C1941	QCZ0122-561A	C CAP.	560 p F 2kV K	
	C1942	QEZ0203-107	E CAP.	100 μ F 160V	
	C1949	QFLC1HJ-224MZ	M CAP.	0.22 μ F 50V J	
⚠	C1981	QCZ9036-222M	C CAP.	2200 p FAC400V M	
⚠	C1982	QCZ9036-471M	C CAP.	470 p FAC400V K	
	TRANSFORMER				
	T1121	CELT001-303J2	CW TRANSF.		
⚠	T1521	CJ28268-00AJ1	HV TRANSF.		
	T1531	CE40203-00AJ1	DRIVE TRANSF.		
⚠	T1921	CETS037-001J5	SW TRANSF.		
	COIL				
	L1002-03	CELP059-5R6Z	PEAKING COIL	5.6 μ H	
	L1102	CELP041-R82	PEAKING COIL	0.82 μ H	
	L1122	CELP059-100Z	PEAKING COIL	10 μ H	
	L1123	CELP059-8R2Z	PEAKING COIL	8.2 μ H	
	L1124	CELP059-150Z	PEAKING COIL	15 μ H	
	L1301-02	CELP059-101Z	PEAKING COIL	100 μ H	
	L1351-53	CELP059-820Z	PEAKING COIL	82 μ H	
	L1381	CELP059-121Z	PEAKING COIL	120 μ H	
	L1521	CE41807-00B	H.LIN.COIL		
	L1591	CELC901-028J6	HEATER CHOKE		
	L1622	CELP059-4R7Z	PEAKING COIL	4.7 μ H	
	L1623	CELP059-150Z	PEAKING COIL	15 μ H	
	L1701	CELP059-4R7Z	PEAKING COIL	4.7 μ H	
	L1941	CELC058-820Z	CHOKE COIL		
	DIODE				
	D1001	MTZJ33(B)-T2	ZENER DIODE		
	D1101-02	1SS85-T2	SI.DIODE		
	D1121-22	1SS133-T2	SI.DIODE		
	D1201	MTZJ5.6(B)-T2	ZENER DIODE		
	D1251-52	MTZJ13(B)-T2	ZENER DIODE		
	D1253	1SS85-T5	SI.DIODE		
	D1401	MTZJ9.1(B)-T2	ZENER DIODE		
	D1404	1SR35-100A-T2	SI.DIODE		
	D1501	MTZJ8.2(B)-T2	ZENER DIODE		
	D1502	1SS133-T2	SI.DIODE		
	D1541	RH1S-T3	SI.DIODE		
	D1542-43	RGP10J(C1)-T3	SI.DIODE		
	D1544	1SR35-100A-T2	SI.DIODE		
	D1565	1SS133-T2	SI.DIODE		
	D1567-68	1SS133-T2	SI.DIODE		
	D1581	RGP10J(C1)-T3	SI.DIODE		
	D1582	MTZJ5.1(A)-T2	ZENER DIODE		
	D1583	1SS133-T2	SI.DIODE		

⚠ Symbol No.	Part No.	Part Name	Description	Local
D I O D E				
D1584	MTZJ5.1(A)-T2	ZENER DIODE		
D1602	1SS133-T2	SI.DIODE		
D1651	MTZJ13(B)-T2	ZENER DIODE		
D1704	1SS133-T2	SI.DIODE		
D1709	1SS133-T2	SI.DIODE		
D1711-12	1SS133-T2	SI.DIODE		
D1713-14	MTZJ5.6(A)-T2	ZENER DIODE		
D1751	SLR-342VR-T	L.E.D.(RED)		
D1752	SLR-342DU-T	L.E.D.(ORG)		
⚠ D1901	D2SBA60	BRIDGE DIODE		
D1921	AU01Z-T2	SI.DIODE		
D1922	1SS133-T2	SI.DIODE		
D1923	AU01Z-T2	SI.DIODE		
D1924	RU1C-LFC4	SI.DIODE		
D1925	MTZJ15(C)-T2	ZENER DIODE		
D1926	MTZJ6.8(C)-T2	ZENER DIODE		
D1941	RU3AM-LFC4	SI.DIODE		
D1942	RGP10J(C1)-T3	SI.DIODE		
D1943	1SR35-100A-T2	SI.DIODE		
D1945	RGP10J(C1)-T3	SI.DIODE		
D1946	MTZJ11(A)-T2	ZENER DIODE		
D1947	1SR35-100A-T2	SI.DIODE		
T R A N S I S T O R				
Q1101	2SC5083(L-P)-T	SI.TRANSISTOR		
Q1102	DTC124ESA-T	DIGI.TRANSISTOR		
Q1121-22	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1123-24	DTC124ESA-T	DIGI.TRANSISTOR		
Q1125-26	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1127	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1201	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1251	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1301	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1302	DTC124ESA-T	DIGI.TRANSISTOR		
Q1303	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1351-53	2SC4722(NP)	SI.TRANSISTOR		
Q1521	2SC1627A(OY)-T	SI.TRANSISTOR		
⚠ Q1522	2SD1878-YD	SI.TRANSISTOR	H.OUT	
Q1525	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1581	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1601	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1621-23	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1624-25	DTC124ESA-T	DIGI.TRANSISTOR		
Q1651	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1701-02	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1704	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1751	DTA124ESA-T	DIGI TRANSISTOR		
Q1801	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1802	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1921	2SA933AS(QR)-T	SI.TRANSISTOR		
Q1941	2SA966(OY)-T	SI.TRANSISTOR		
Q1942-44	2SC1740S(QR)-T	SI.TRANSISTOR		
I C				
IC1201	M52343SP-D	I.C.		
IC1251	LA7016	I.C.(MONO-ANA)		
IC1301	U3660M-B	I.C.(MONO-ANA)		
IC1302	M52325P	I.C.(MONO-ANA)		
IC1401	LA7837	I.C.(MONO-ANA)		
IC1542	KIA78L08BP-Y	I.C.(MONO-ANA)		
IC1543	KIA7805PI	I.C.(MONO-ANA)		
IC1601	AN5265	I.C.(MONO-ANA)		
IC1651	LA7016	I.C.(MONO-ANA)		
IC1701	M37212M4-051SP	I C		
IC1702	AT24C04-G14M	I.C.(EP-ROM)	(SERVICE)	
IC1703	L78LR05E-MA	I.C.(MONO-ANA)		
IC1751	TFMS5380ESN	IFR DETECT UNIT		

⚠	Ref.No.	Part No.	Part Name	Description	Local
	I C				
	IC1921	STR-S6707	I.C.(HYBRID)		
	IC1941	S1854-C2	I.C.(MONO-ANA)		
	O T H E R S				
		CM45963-003-H	SHIELD PLATE		
		CM35833-A01-H	L.E.D.HOLDER		
	CF1121	TPSH6.0MB	CERAMIC FILTER		
	CF1122	TPS5.5MW	CERAMIC FILTER		
	CF1123	TPS6.5MB	CERAMIC FILTER		
	CF1124	EFCWS4504A	CERAMIC FILTER		
	CF1501	CSB503F18	CER.RESONATOR		
	CF1621	SFT4.5MA	CERAMIC FILTER		
	CF1622	SFT5.5MA	CERAMIC FILTER		
	CF1623	SFE6.0MC	CERAMIC FILTER		
	CF1624	SFE6.5MC2	CERAMIC FILTER		
	CF1625	SFE6.0MC	CERAMIC FILTER		
	CF1626	SFE6.5MC2	CERAMIC FILTER		
⚠	CP1941	ICP-N38-Y	I.C.PROTECT		
⚠	CP1942	ICP-N38-Y	I.C.PROTECT		
⚠	F1901	QMF51E2-3R15J4	FUSE	3.15A	
⚠	FR1601	QRD149J-101S	C R	100 Ω 1/4W J	
	J1001	CEMN075-001	PIN JACK		
	K1921	CE42050-001Z	CORE		
	K1924	CE42050-001Z	CORE		
	K1941	CE42050-001Z	CORE		
	K1944	CE42050-001Z	CORE		
⚠	LF1901	CELF010-001J6	LINE FILTER		
⚠	PC1921	PC123F2	PHOTO COUPLER		
	S1301	QSL6A13-C01	LEVER SWITCH	SECAM DISCRI	
	S1751	QSP1A11-C18Z	PUSH SWITCH	CH PRESET	
	S1752	QSP1A11-C18Z	PUSH SWITCH	CH -	
	S1753	QSP1A11-C18Z	PUSH SWITCH	CH +	
	S1754	QSP1A11-C18Z	PUSH SWITCH	VOL -	
	S1755	QSP1A11-C18Z	PUSH SWITCH	VOL +	
	SF1101	CE41099-601	SAW FILTER		
⚠	SK1351	CE42535-001J1	CRT SOCKET		
⚠	TH1901	CEKP010-001J2	W.P.THERMISTOR		
	TU1001	CEEU534-B04	U/V E TUNER		
⚠	VA1901	AVR-S10D511K	VARISTOR		
	X1301	CE41092-00AJ2	CRYSTAL		
	X1302	CE40749-001J2	CRYSTAL		
	X1701	CST8.00MTW	CER.RESONATOR		

PACKING



PACKING PARTS LIST

⚠	Symbol No.	Part No.	Part Name	Description	Local
	1	CP10974-082-H	PACKING CASE		
	2	CP11308-00B-H	CUSHION ASSY	4pcs in 1set	
	3	CM47385-00B-H	POS/SERIAL LABEL		
	4	CP30697-005-H	POLY BAG		
	5	RM-C457-1H	REMOCON UNIT		
⚠	6	CQ40047-001-H	INST.BOOK		
	7	CQ40048-001-H	DIGEST MANUAL		
	8	QPGA025-03505H	POLY BAG		
	9	CQ40030-001-H	INSTRUCT.SHEET		
	11	CEMK002-001	ADAPTOR PLUG	AV-21MEN-A ONLY	

AV-21ME(N) AV-21ME(N)-A STANDARD CIRCUIT DIAGRAM

■NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal	:PAL Color bar signal
(2)Setting positions of each knob/button and variable resistor	:Original setting position when shipped
(3)Internal resistance of tester	:DC 20kΩ/V
(4)Oscilloscope sweeping time	:H ⇒20μS/div
	:V ⇒5mS/div
	:Others ⇒ Sweeping time is specified
(5)Voltage values	:All DC voltage values

* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL[EXAMPLE]

•In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

•Resistance value

No unit	:[Ω]
K	:[KΩ]
M	:[MΩ]

•Rated allowable power

No indication	:1/6[W]
Others	:As specified

•Type

No indication	:Carbon resistor
OMR	:Oxide metal film resistor
MFR	:Metal film resistor
MPR	:Metal plate resistor
UNFR	:Uninflammable resistor
FR	:Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

•Capacitance value

1or higher	:[pF]
less than 1	:[μF]

•Withstand voltage

No indication	:DC50[V]
Others	:DC withstand voltage[V]
AC indicated	:AC withstand voltage[V]

* Electrolytic Capacitors

47/50[Example]:Capacitance value[μF]/withstand voltage[V]

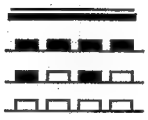
•Type

No indication	:Ceramic capacitor
MY	:Mylar capacitor
MM	:Metalized mylar capacitor
PP	:Polypropylene capacitor
MPP	:Metalized polypropylene capacitor
MF	:Metalized film capacitor
TF	:Thin film capacitor
BP	:Bipolar electrolytic capacitor
TAN	:Tantalum capacitor

(3)Coils

No unit	:[μH]
Others	:As specified

(4)Power Supply



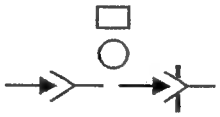
:B1
:B2(12V)
:8V
:5V

* Respective voltage values are indicated.

(5)Test Point

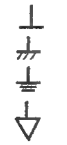
: Test point
: Only test point display

(6)Connecting method



: Connector
: Wrapping or soldering
: Receptacle

(7)Ground symbol



: LIVE side ground
: ISOLATED(NEUTRAL) side ground
: EARTH ground
: DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND. Therefore, care must be taken for the following points.

(1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2) Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

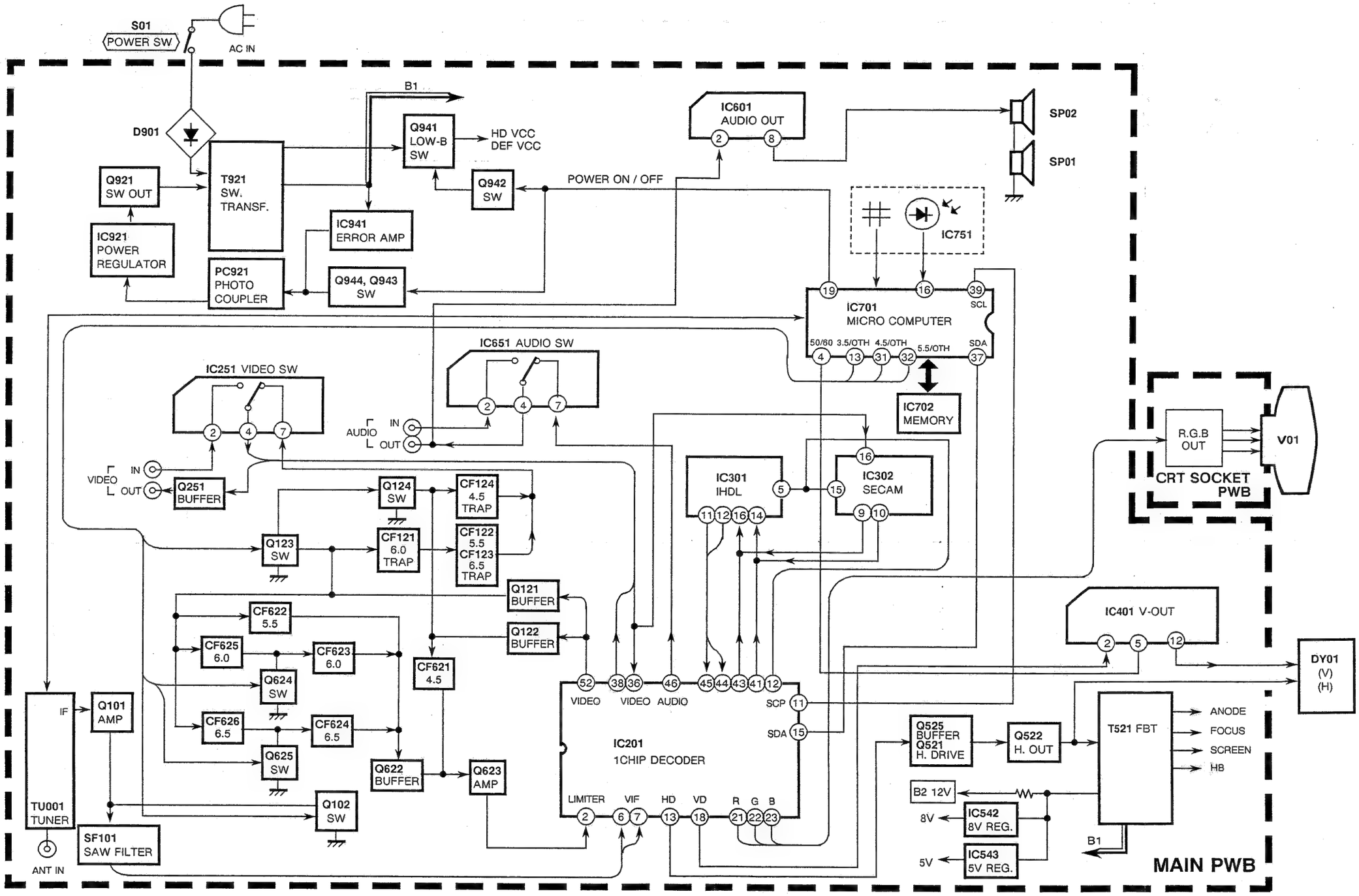
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

Mar. 1996 No.50920D

WIRING LIST

P.W.BOARD or PART NAME	CONNECTOR NAME	WIRING	CONNECTOR NAME	P.W.BOARD or PART NAME
MAIN PWB ASS'Y	T	⟷	T	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	U	⟷	U	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	DEG.	⟷	WIRE	DEG. COIL
MAIN PWB ASS'Y	H/V	⟷	WIRE	DEF. YOKE
MAIN PWB ASS'Y	S	⟷	WIRE	SPEAKER 01, 02
MAIN PWB ASS'Y	P	⟷	WIRE	POWER SW
POWER SW	WIRE	⟷	WIRE	POWER CORD
MAIN PWB ASS'Y	A	⟷	A	FRONT CONTROL PWB ASS'Y
MAIN PWB ASS'Y	B	⟷	B	FRONT CONTROL PWB ASS'Y
CRT SOCKET PWB ASS'Y	E1 CRT EARTH	⟷	EARTH WIRE	CRT(BRAIDED ASS'Y)

BLOCK DIAGRAM



CIRCUIT DIAGRAMS AND PWB PATTERNS

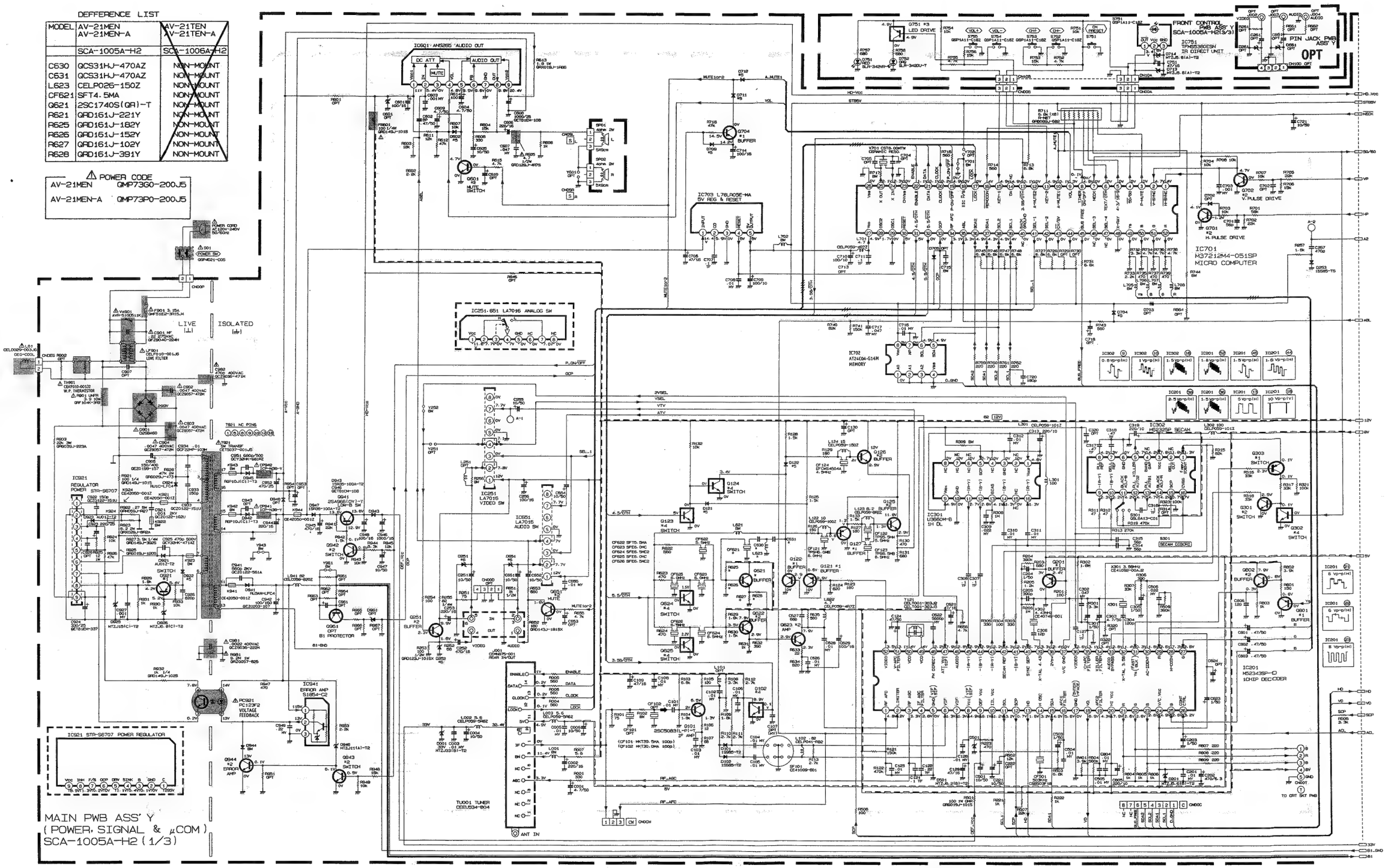
MAIN PWB, CRT SOCKET PWB & FRONT CONTROL PWB CIRCUIT DIAGRAMS

DEFFERENCE LIST

MODEL	AV-21MEN AV-21MEN-A	AV-21TEN AV-21TEN-A
	SCA-1005A-H2	SCA-1006A-H2
C630	QCS31HJ-470AZ	NON-MOUNT
C631	QCS31HJ-470AZ	NON-MOUNT
L623	CELP026-150Z	NON-MOUNT
CF621	SFT4.5MA	NON-MOUNT
Q621	2SC1740S(QR)-T	NON-MOUNT
R621	QRD161J-221Y	NON-MOUNT
R625	QRD161J-182Y	NON-MOUNT
R626	QRD161J-152Y	NON-MOUNT
R627	QRD161J-102Y	NON-MOUNT
R628	QRD161J-391Y	NON-MOUNT

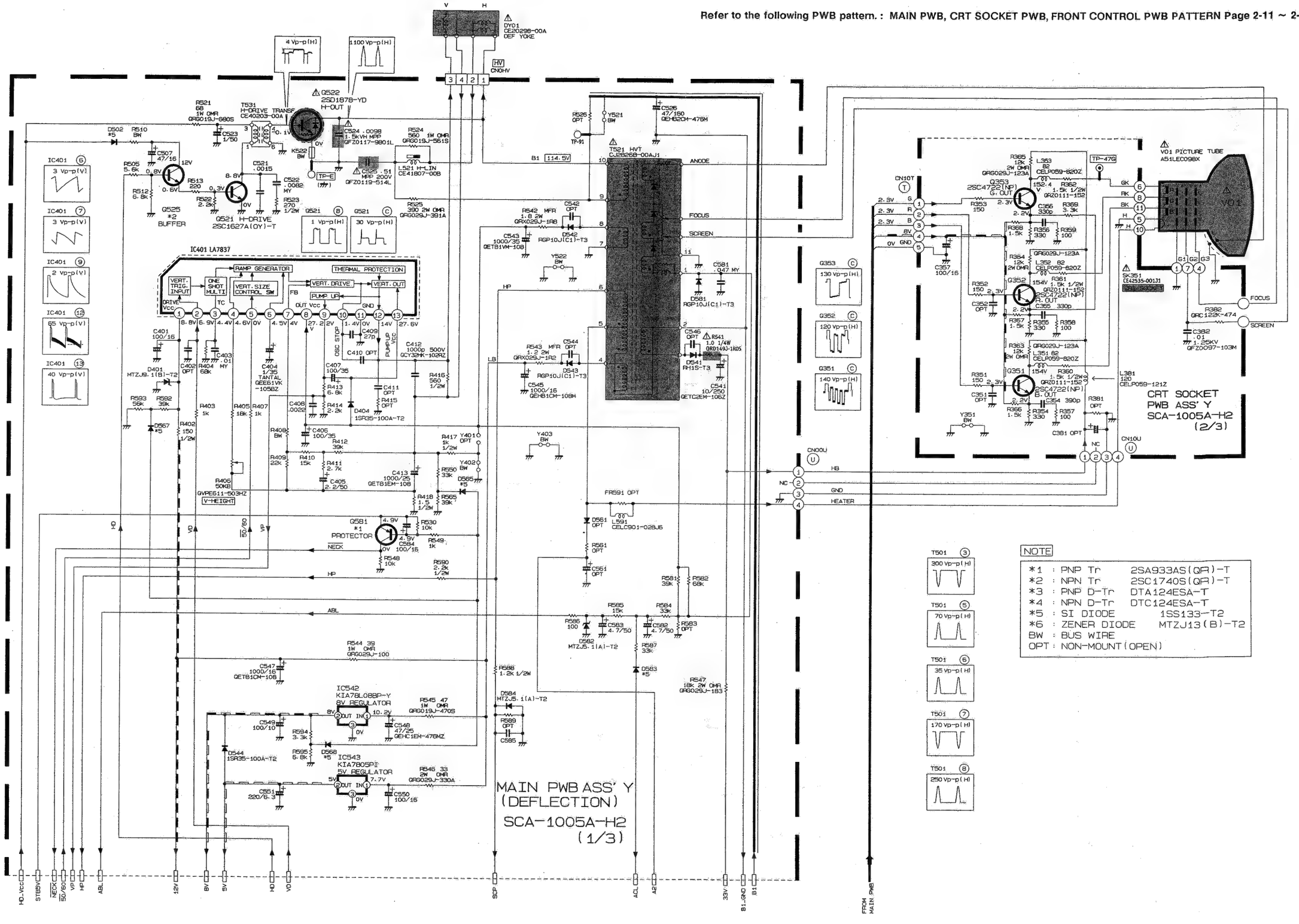
⚠ POWER CODE

AV-21MEN	QMP73G0-200J5
AV-21MEN-A	QMP73P0-200J5

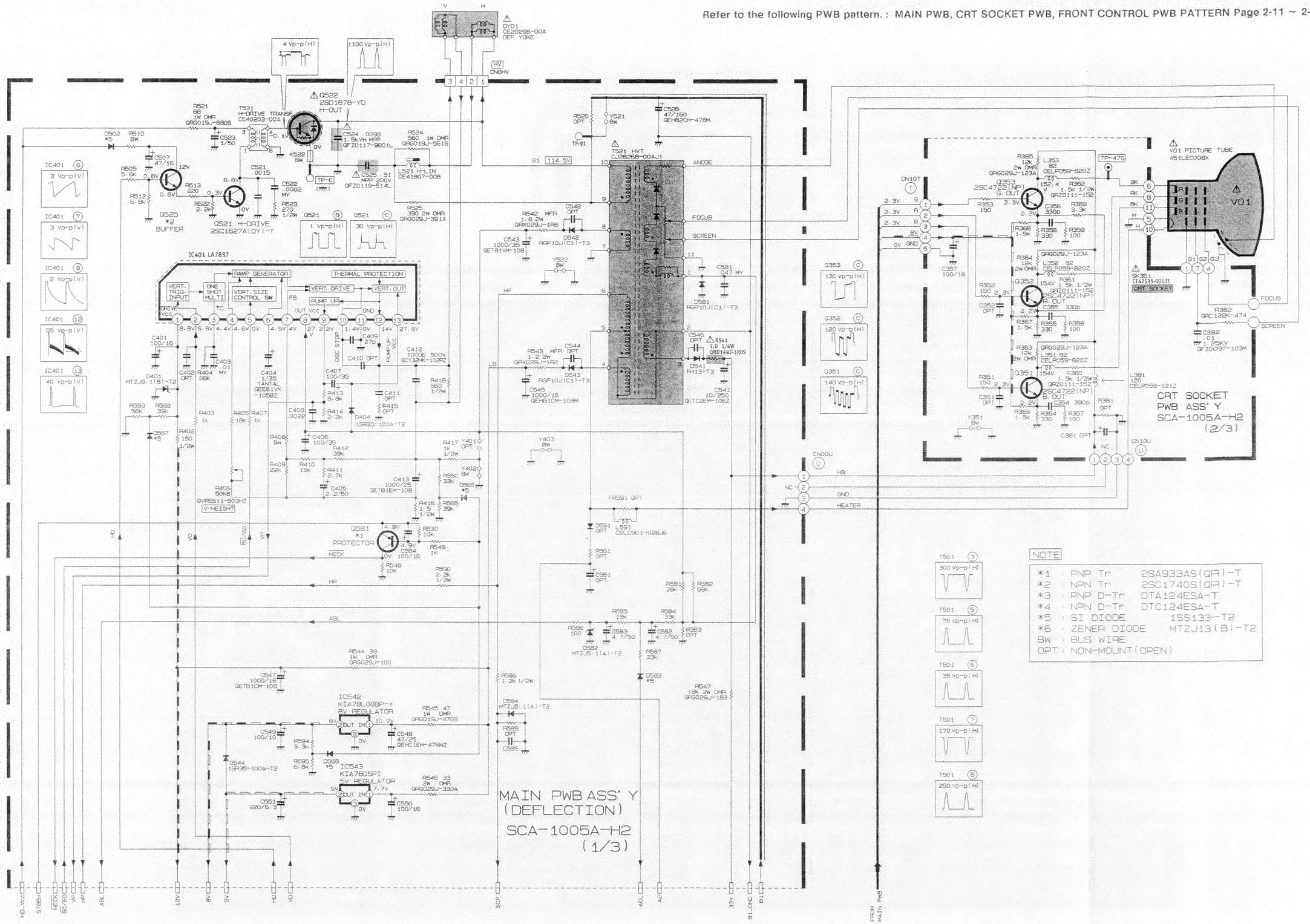


NOTE

*1 : PNP Tr	2SA933AS(QR)-T	*5 : SI DIODE	1SS133-T2
*2 : NPN Tr	2SC1740S(QR)-T	*6 : ZENER DIODE	MTZJ13(B)-T2
*3 : PNP D-Tr	DTA124ESA-T	BW : BUS WIRE	
*4 : NPN D-Tr	DTC124ESA-T	OPT : NON-MOUNT(OPEN)	



NOTE		
*1	: PNP Tr	2SA933AS(QR)-T
*2	: NPN Tr	2SC1740S(QR)-T
*3	: PNP D-Tr	DTA124ESA-T
*4	: NPN D-Tr	DTC124ESA-T
*5	: SI DIODE	1SS133-T2
*6	: ZENER DIODE	MTZJ13(B)-T2
BW	: BUS WIRE	
OPT	: NON-MOUNT(OPEN)	

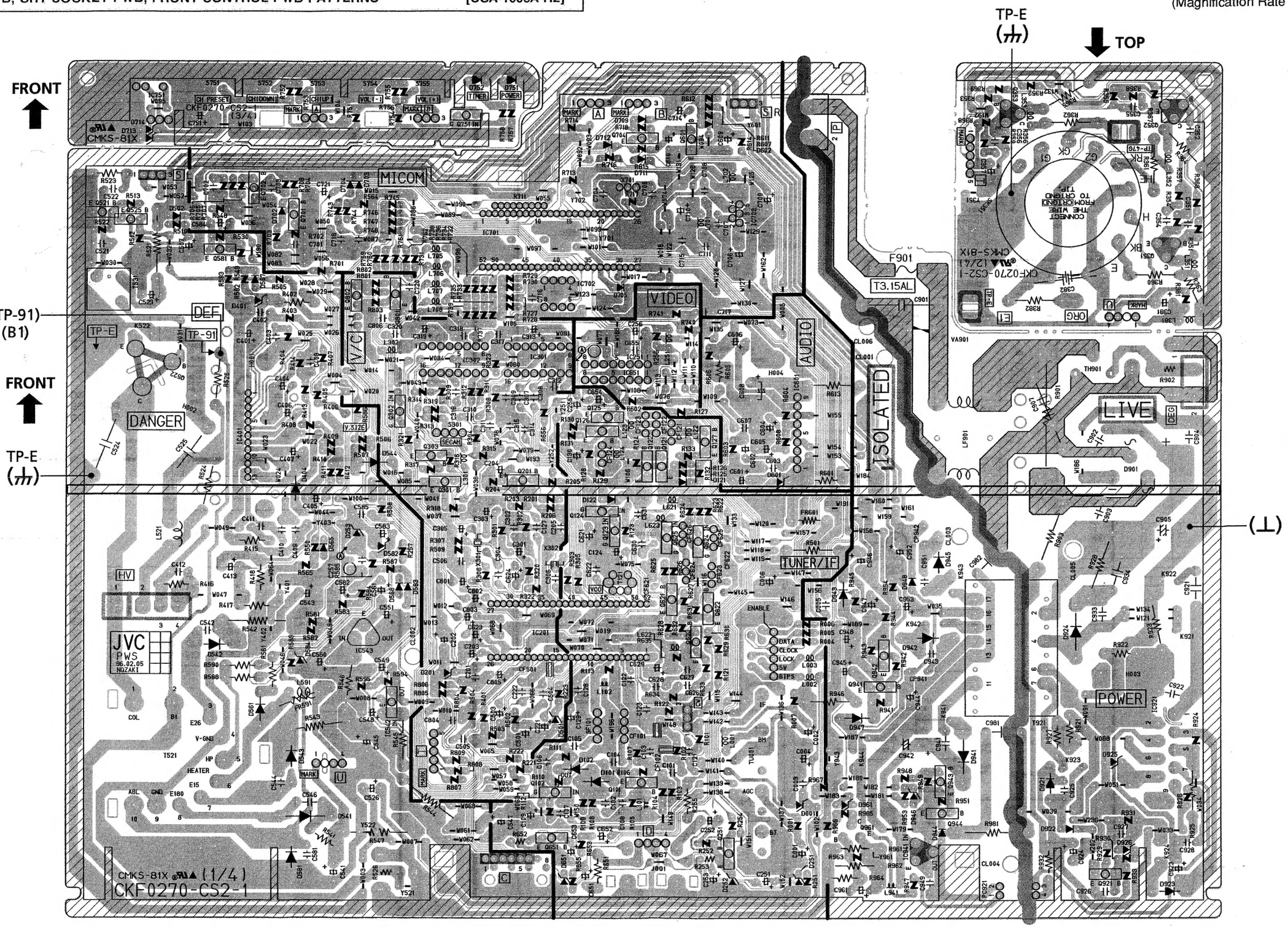


NOTE

*1	: PNP Tr	2SA933AS(QR)-T
*2	: NPN Tr	2SC1740S(QR)-T
*3	: PNP D-Tr	DTA124ESA-T
*4	: NPN D-Tr	DTC124ESA-T
*5	: SI DIODE	1SS133-T2
*6	: ZENER DIODE	MTZJ13(B)-T2
BW	: BUS WIRE	
OPT	: NON-MOUNT(OPEN)	

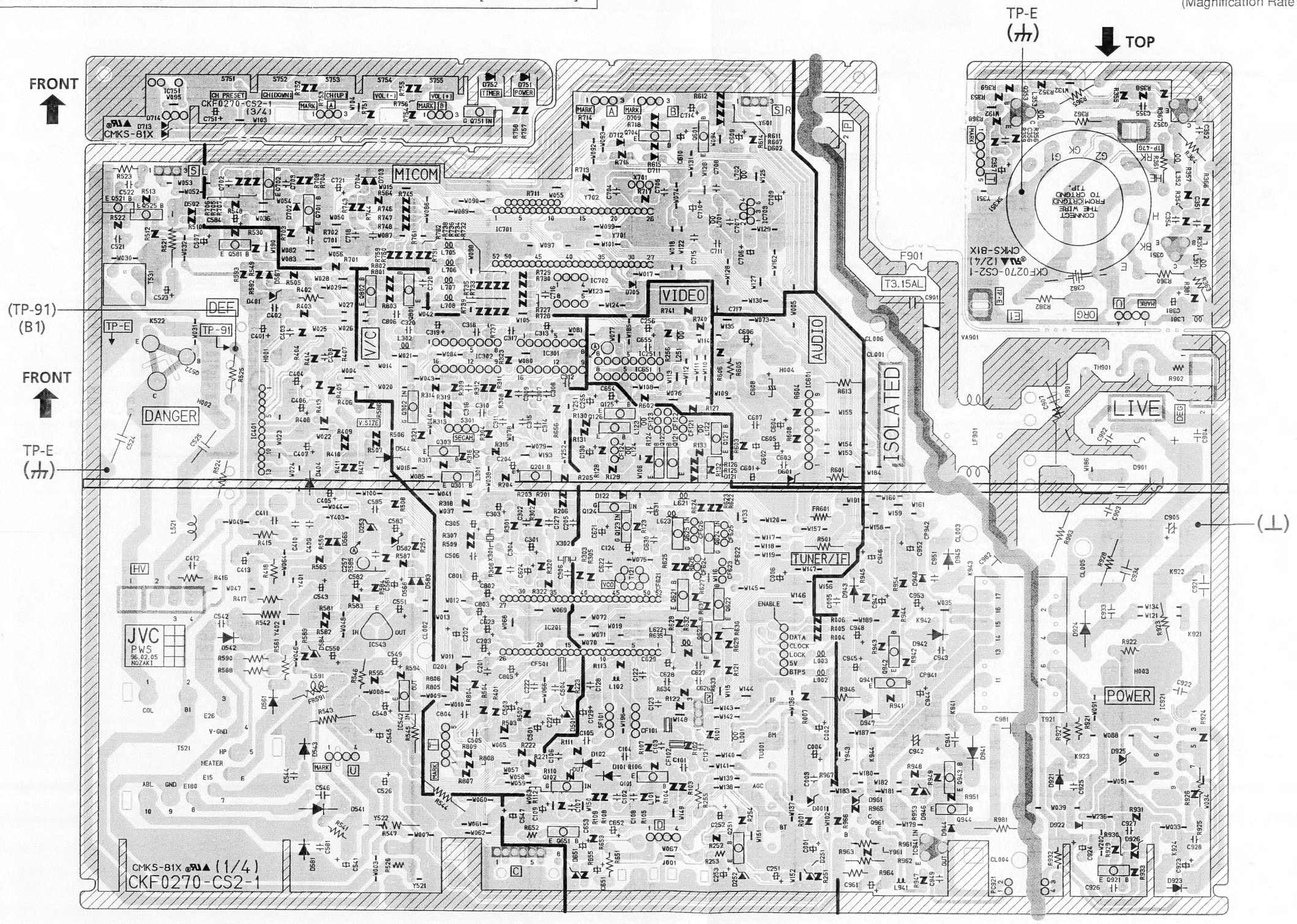
MAIN PWB, CRT SOCKET PWB, FRONT CONTROL PWB PATTERNS [SCA-1005A-H2]

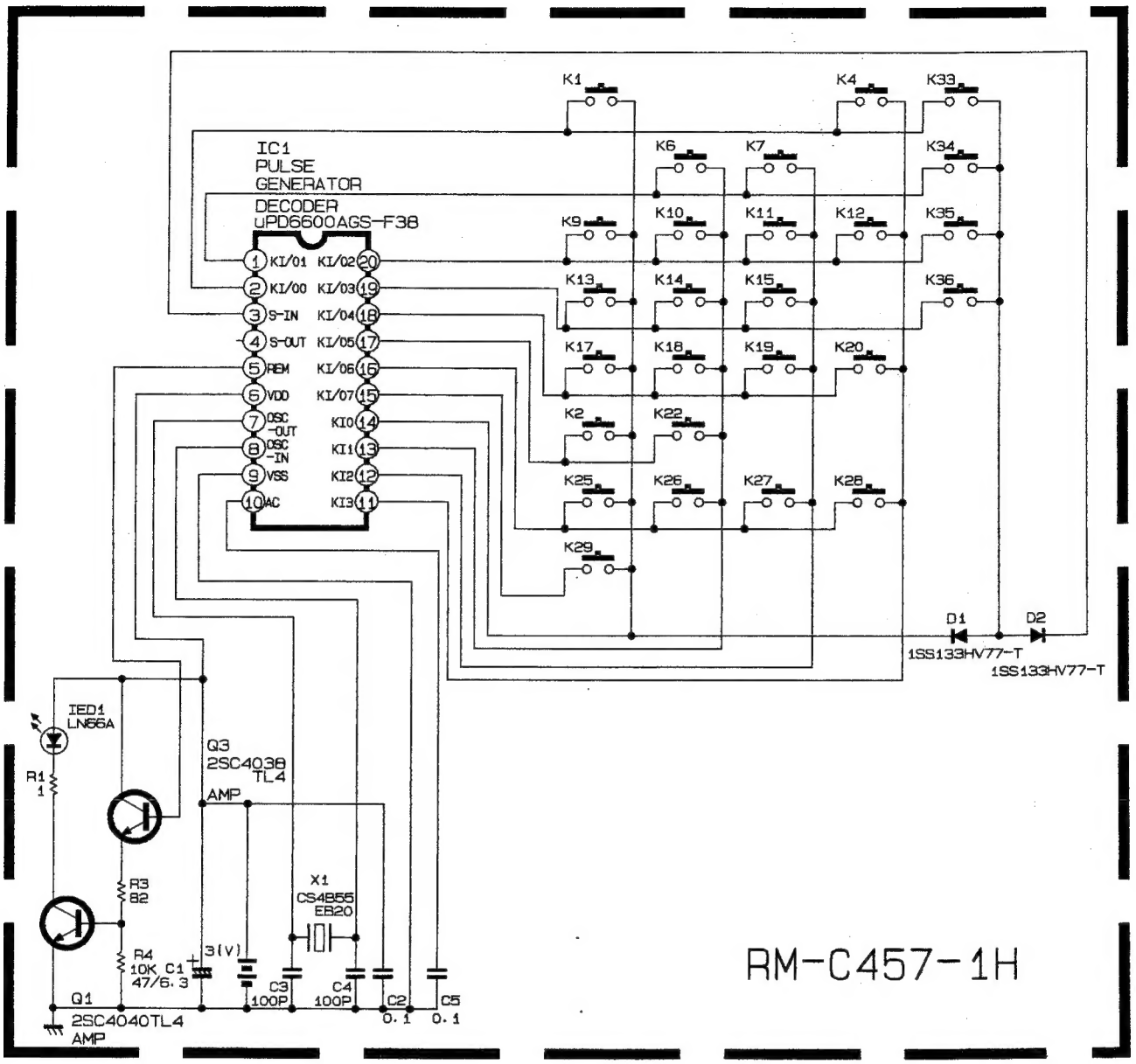
(Magnification Rate 95%)



MAIN PWB, CRT SOCKET PWB, FRONT CONTROL PWB PATTERNS [SCA-1005A-H2]

(Magnification Rate 95%)





KEY NO.	FUNCTION	KEY NO.	FUNCTION	KEY NO.	FUNCTION	KEY NO.	FUNCTION
1	POWER	10	2	19	7	28	PICTURE MODE
2		11	1	20	OFF TIMER	29	MUTE
3		12	DISPLAY	21	- / - -	30	
4	TV/VIDEO	13	6	22	0	31	
5		14	5	23		32	
6	SOUND SYSTEM	15	4	24		33	VOLUME +
7	COLOUR SYSTEM	16		25	+ (FUNCTION)	34	VOLUME -
8		17	9	26	PICTURE ADJUST	35	CHANNEL +
9	3	18	8	27	- (FUNCTION)	36	CHANNEL -

* KEY NO. 12 + KEY NO. 13: SERVICE MODE ON